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ABSTRACT

This report deals specifically with the U.S. Naval Academy and also explores how all three of the service academies have treated women and minorities. The report addresses: (1) differences in performance indicators between men and women and between whites and minorities; (2) midshipmen's perceptions of the fairness of the treatment female and minority midshipmen receive; and (3) actions the Naval Academy has taken to enhance the assimilation of women and minorities into the Academy. Most of the data in this report covers 4 full classes, 1988-91. This report does not address the causes for the gender or racial differences in the performance indicators. Performance indicators show that women have not fared as well as men with regard to class standings; academic, physical education, and military grades; outcomes of the conduct and honor systems; and attrition rates. Minority students have not fared as well as white students on these same indicators. In gender comparisons of 16 performance indicators, significant differences were found in 12 that disfavored females and in 3 that disfavored males. In white-minority comparisons using 17 indicators, significant differences were found in 12 that disfavored minorities and in 1 that disfavored whites. Results of a survey of midshipmen to determine their perceptions of how women and minorities were treated at the Academy revealed perceptions that women and minorities generally received treatment equal to that of men and whites. However, a higher percentage of women than men perceived that women were treated worse, and a higher percentage of minorities than whites perceived that minorities were treated worse. (Author/DK)

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United States General Accounting Office

GAO

Report to the Chairman, Committee on Armed Services, U.S. Senate

April 1993

NAVAL ACADEMY

Gender and Racial Disparities

ED 371 972

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GAO

United States
General Accounting Office
Washington, D.C. 20548

National Security and
International Affairs Division

B-240866

April 30, 1993

The Honorable Sam Nunn
Chairman, Committee on
Armed Services
United States Senate

Dear Mr. Chairman:

In response to your request and that of the former Chairman of the Subcommittee on Manpower and Personnel, we reviewed the treatment of women and minorities at all three of the service academies; this report deals with the Naval Academy. Specifically, the report addresses (1) differences in performance indicators between men and women and between whites and minorities, (2) student perceptions of the fairness of treatment of women and minorities, and (3) Academy actions to address disparities and improve assimilation of women and minorities. This report expands upon the preliminary results we presented at the hearing on the service academies before the Subcommittee on Manpower and Personnel on June 2, 1992.

As arranged with your office, unless you publicly announce its contents earlier, we plan no further distribution of this report until 15 days from its date of issue. At that time, we will send copies to interested congressional committees, other interested Members of Congress, the Secretaries of Defense and the Navy, and the Superintendent of the Naval Academy. We will also make copies available to other parties on request.

This report was prepared under the direction of Paul L. Jones, who can be reached on (202) 512-3990. The major contributors to this report are listed in appendix IV.

Sincerely yours,

Frank C Conahan

Frank C. Conahan
Assistant Comptroller General

Executive Summary

Purpose

Concerned about how the military academies were treating women and minorities, the Chairman of the Senate Committee on Armed Services and the former Chairman of its Subcommittee on Manpower and Personnel asked GAO to examine the issue. This report deals with only the Naval Academy and addresses (1) differences in performance indicators between men and women and between whites and minorities, (2) midshipmen's perceptions of the fairness of the treatment female and minority midshipmen receive, and (3) actions the Academy has taken to enhance the assimilation of women and minorities into the Academy. Most of the data in this report covers four full classes, 1988-91. This report does not address the causes for the gender or racial differences in the performance indicators.

Background

While blacks have attended the Academy since the reconstruction era, until fairly recently, they and other minorities have been few in number. For 131 years, the Academy operated in an all-male environment. In 1975, Congress authorized women to enter the service academies. As of September 30, 1992, minorities and women constituted 19.5 and 11.1 percents, respectively, of the students enrolled at the Academy.

Results in Brief

Performance indicators show that women have not fared as well as men with regard to class standings; academic, physical education, and military grades; outcomes of the conduct and honor systems; and attrition rates. Minority students have not fared as well as white students on these same indicators.

GAO used statistical significance tests and a rule of thumb test based on comparisons of subgroup percentages to assess the significance of gender and racial disparities. In the gender comparisons of the 16 performance indicators, GAO found significant differences in 12 that disfavored females and in 3 that disfavored males. In white-minority comparisons using 17 indicators, GAO found significant differences in 12 that disfavored minorities and in 1 that disfavored whites.

In addition, GAO surveyed midshipmen to determine their perceptions of how women and minorities were treated at the Academy. The survey revealed perceptions that women and minorities generally received treatment equal to that of men and whites. However, a higher percentage of men than women perceived that women were treated better, and a higher percentage of women than men perceived that they were treated

worse. Similarly, a higher percentage of whites than minorities perceived that minorities were treated better, and a higher percentage of minorities than whites perceived that they were treated worse.

The Academy has taken a number of steps to better address the assimilation of women and minorities. The Academy, however, does not have a comprehensive data base to analyze student performance indicators to identify significant gender or racial disparities. The Academy has not documented the implementation of prior equal opportunity recommendations.

Principal Findings

Gender Differences in Academy Student Data

Although women had higher Scholastic Aptitude Test scores and Academy success predictor scores than men, women on average had lower grade point averages as freshmen and sophomores and lower class standings as seniors. They also had lower military performance grades and rankings.

Freshman women had higher conviction rates for conduct offenses, particularly for more serious offenses. A higher percentage of women than men were charged with an honor system offense, such as lying or cheating, and their cases were dropped less often.

For the classes of 1980-91, the average attrition rate for women was 33 percent, compared with 23 percent for men.

Racial Differences in Academy Student Data

Minorities entering the Academy generally had lower Scholastic Aptitude Test and Academy success predictor scores than whites and generally received lower grades and had lower class standings. For the classes of 1988-91, the percentage of minorities in the lowest quartile of class standings ranged from 36 to 44, compared with 22 to 23 percent of whites. Regression analysis results indicated that a correlation between lower grades and minority students existed even after the difference in success predictor scores was accounted for. Minorities also received lower military performance grades, rankings, and physical education grades than whites.

Minority students had higher conviction rates for conduct offenses than whites. Minorities were charged with and convicted of honor system offenses at higher rates than whites. However, the Academic Board has retained academically deficient minority and white students at about the same rate.

For the classes of 1980-91, the average attrition for minorities was 30 percent, compared with 23 percent for whites.

Perceptions of Treatment of Women and Minorities

The majority of midshipmen responding to a GAO questionnaire perceived that women and minorities generally received the same treatment as men and whites by faculty members and by disciplinary boards. However, about half of the men and one-third of the women responded that women received better treatment by the Academic Board. White and minority respondents had similar perceptions that minorities received better treatment by the Academic Board.

Academy Actions to Address Issues That Affect Women and Minorities

In the past few years, the Academy has taken a number of steps to address issues affecting women and minorities. It has begun efforts to increase female and minority representation among Academy faculty and brigade officers, established a support/intervention program for academically at-risk midshipmen and an equal opportunity program that includes an annual climate assessment, and placed minority and women graduates in every community in the naval service.

These actions should improve the treatment of women and minorities. However, the Academy and others have had difficulties obtaining data needed to determine the extent of any disparate treatment or any improvement in treatment due to the absence of a comprehensive data base. The reviews conducted as part of the Academy's equal opportunity program identified gender and racial disparities, but the significance of these disparities was not tested. Finally, the Academy did not prepare a document outlining actions to be taken in response to the reviews' recommendations, making evaluation of the effectiveness of the corrective actions more difficult.

Recommendations

GAO recommends that the Superintendent of the Naval Academy take actions to improve the monitoring and evaluation of gender and racial disparities. Such actions should include developing a comprehensive data

base, establishing criteria for determining significant differences on student data indicators, and preparing an equal opportunity program document to track recommendations and corrective actions.

Agency Comments

GAO did not obtain fully coordinated Department of Defense comments on the report. However, GAO provided a draft of this report to senior officials from the Academy and cognizant officials of the Chief of Naval Operations and the Department of Defense and discussed it with them. They suggested a number of technical clarifications, which have been incorporated in this report, and indicated that the Academy was taking actions in line with most of GAO's recommendations.

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Abbreviations

CMEO	Command Managed Equal Opportunity
DOD	Department of Defense
SAT	Scholastic Aptitude Test

Introduction

In 1845, the Secretary of the Navy founded the Naval School at Fort Severn in Annapolis, Maryland. Five years later, the school was reorganized as the U.S. Naval Academy. The Academy provides a 4-year program that includes college education and military and physical training. According to the 1991-92 Academy catalog, the Academy's mission is "To develop midshipmen morally, mentally and physically and to imbue them with the highest ideals of duty, honor and loyalty in order to provide graduates who are dedicated to a career of naval service and have potential for future development in mind and character to assume the highest responsibilities of command, citizenship and government."

As of September 30, 1991, in the beginning of academic year 1992, 4,270 midshipmen (students) attended the Academy, of whom 803 were minorities[1] and 437 were women. There were 1,031 graduates in the class of 1992, including 152 minorities and 96 women. Midshipmen receive pay, amounting to $543.90 a month, while attending the Academy. In return, they agree to serve a minimum of 6 years on active duty after graduation.[2] Graduates are commissioned as ensigns in the Navy or as second lieutenants in the Marine Corps.

The Academy admits men and women between the ages of 16 and 22 who are found to be scholastically qualified, pass a physical aptitude examination, and are medically qualified. The Academy also looks at nonathletic activities and part-time employment or military service as indicators of ability to manage time and of leadership potential. In 1991, those accepted for admission had average Scholastic Aptitude Test scores of 570 in verbal and 659 in math, which were considerably higher than the 1991 national average scores of 422 in verbal and 474 in math.

The Academy also considers desired class composition of minorities and women in its selection of applicants. The Academy uses the "Chief of Naval Operations' goals" as a basis for establishing targets. Its targets for blacks are 7 percent and 4 percent for Hispanics, which are the same as for the fleet. The goals call for the number of women to graduate and access into the Navy to be proportionate to the fleet female population in the areas that women can serve, about 10 percent. The Academy accepts a greater percentage of women and minorities to allow for attrition and still achieve the Chief of Naval Operations' accession goals.

[1]The term "minority," as used in this report, includes minority women. Similarly, the term "women" includes minority women.

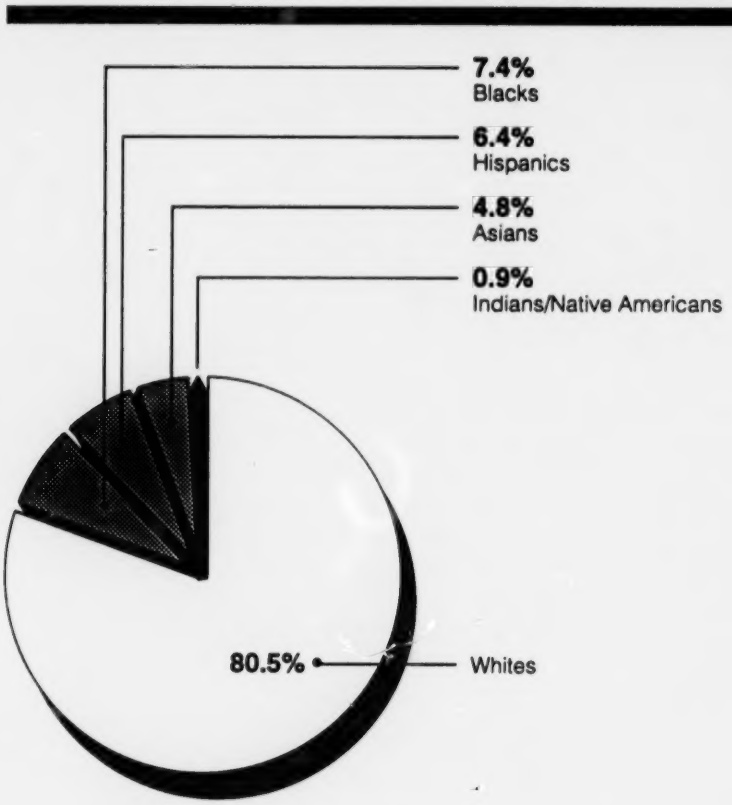
[2]Prior to the class entering in 1992, midshipmen agreed to serve a minimum of 5 years.

Minorities Have Attended the Academy Since 1872

While blacks have attended the Academy since the reconstruction era, until fairly recently they and other minorities have been few in number. Between 1872 and 1937, five blacks attended the Academy, but none graduated. The first black to graduate was in the class of 1949. During the two decades following his graduation, 54 blacks entered the Academy, and 35 graduated. By 1970, 1.5 percent of the midshipmen were black, a percentage that has increased over fourfold in the ensuing two decades. As of September 30, 1992, there were 7.4 percent blacks enrolled in the Academy.

Data on minorities other than blacks were not available for the early years at the Academy. However, as of September 30, 1992, other minorities comprised 12.1 percent of those enrolled at the Academy, as shown in figure 1.1.

Figure 1.1: Percentage of Minority Groups in Student Body (as of September 30, 1992)



Source: Academy records.

Women Were First Admitted to the Academy in 1976

For 131 years, the Academy operated in an all-male environment. In 1975, Congress authorized women to enter the service academies, and 81 women were admitted to the Academy in 1976.[3] Fifty-five of these women graduated 4 years later with the class of 1980. In 1984, Midshipman Kristine Holderied became the first woman to graduate at the top of her class at any service academy.

As of September 30, 1992, women comprised 473 (11.1 percent) of the 4,257-member Brigade of Midshipmen. The brigade is divided into 36 companies, all of which live in Bancroft Hall, a dormitory. There are

[3]Public Law 94-106 (10 U.S.C. 6954).

approximately 9 to 12 women in each company, with 3 normally assigned to a room. The number of women who entered the class of 1996 in July 1992 is the largest number ever admitted in any class and constituted 12 percent of the freshman class.

The integration of women into the academies had been characterized as one of the most controversial issues surrounding women in the military in the 1970s.[4] The Department of Defense (DOD) opposed the legislation proposing the admission of women to the service academies and testified against it. Each of the Academy superintendents and each service secretary, among others, testified against it. During congressional hearings in 1972, the debate was often very strong. For example, a Navy captain, expressing his view against integrating the Academy, stated, "The (Naval) Academy exists for one viable reason, to train seagoing naval officers. . . . There is no room, no need, for a woman to be trained in this mode, since by law and by sociological practicalities, we would not have women in those seagoing or warfare specialties."

In September 1973, law suits were brought against the Air Force and the Navy by two women who wanted to enter those academies and by four Members of Congress who objected to being required to discriminate on the basis of sex in making nominations for the academies. Also, from 1972 to 1974, Congress considered various proposals permitting the admission of women to the academies.

In April 1974, the three military departments simultaneously promulgated almost identical official statements totally opposing admitting women to their respective academies. During congressional hearings in 1974, Army Secretary Callaway stated, "Admitting women to West Point will irrevocably change the Academy. The Spartan atmosphere—which is so important to producing the final product (combat leaders)—would surely be diluted."

President Ford, nevertheless, signed Public Law 94-106 on October 7, 1975, requiring the services to admit women to the academies. At each Academy, the class of 1980, the first class with women, entered in 1976.

[4]Major General Jeanne Holm, U.S. Air Force (Ret.), Women in the Military: An Unfinished Revolution(Presidio Press: Novato, California, 1982); Judith Hicks Stiehm, Bring Me Men and Women: Mandated Change at the U.S. Air Force Academy (University of California Press, Berkeley and Los Angeles, California, 1981).

Several Incidents Raised Concerns About Treatment of Women and Minorities

During the 1989-90 school year, incidents at the Academy came to public attention, raising concerns about how female and minority midshipmen were being treated. For example, in the spring of 1990, a female student, who was in her second year, left the Academy after an incident in which she was handcuffed to a urinal in the men's room and other midshipmen gathered, with some taking pictures. The Academy investigated that incident, and two midshipmen received demerits.[5] The reasons the woman cited for leaving the Academy included her disillusionment with the failure of Academy officials to take appropriate action and their inability to see that what happened to her was not an isolated incident, that norms regarding women were not appropriate, and that their passive acceptance of such behaviors help perpetuate their continuation.

In 1989, a Hispanic man resigned from the Academy after being found guilty of violating the honor concept. He was charged with lying about whether he had run on a particular day. During the noontime meal, when freshmen can be required to make daily recitations using quick recall, an upperclass midshipman asked this man whether he had participated in physical activity over the previous weekend. He replied that he had run when he actually had not. Although he subsequently corrected his misstatement, he was charged with an honor violation. He alleged that the midshipman who questioned him about his running had been engaged in a hazing campaign against him. The Academy's investigation concluded that he had not been hazed, citing that the incident the man complained of was an Army Week prank that warranted counseling for the members involved and brigade-wide education prior to Army week. However, an investigator for the DOD Inspector General, who looked into the allegation, concluded that the midshipman had been hazed. In 1990, a Hispanic man resigned during the second semester of his freshman year, citing physical threats and harassment at the Academy. Entries made in a contemporaneous diary he kept indicated that other midshipmen made demeaning statements about him, made him eat and drink until he vomited, and threatened him with a pool cue. He reported these incidents to Academy officials during his resignation process. Academy officials found that those midshipmen committed the conduct offenses of "abuse of the fourth class indoctrination" and "interfering with an individual performing a duty," but not the offense of hazing.

[5]According to Academy officials, letters of caution (administrative warnings that do not become a part of any permanent personnel file) were also issued to those midshipmen.

Objectives, Scope, and Methodology

The Chairman of the Senate Committee on Armed Services and the former Chairman of its Subcommittee on Manpower and Personnel asked us to examine the treatment of women at the Academy. Subsequently, former Congressman Albert G. Bustamante asked us to review the treatment of minorities. This report responds to both requests. Our objectives were to (1) identify midshipmen's perceptions regarding the fairness of treatment of female and minority midshipmen, (2) assess whether significant differences exist between men and women and between whites and minorities on a variety of performance indicators, and (3) determine what actions the Academy has taken to enhance the assimilation of women and minorities into the Academy. This report does not address the causes for the gender or racial differences in the performance indicators.

We performed our review at the Academy, where we reviewed policies, regulations, and procedures and interviewed Academy officials and faculty members. We also administered questionnaires to 527 midshipmen. The questionnaires covered a range of student-related subjects, including the treatment of women and minorities. A detailed description of the questionnaire and related methodological issues appears in appendix I.

The performance indicator data we used to make gender and racial group comparisons covered a spectrum of student experiences beginning with application for admission through graduation. The available data varied in the time periods covered. Some data were available by class year, some data were available by academic year, while other data were available from secondary sources.

Indicators relevant to the admissions process are the percentage of applicants judged to be fully qualified, the percentage of qualified applicants admitted, and the Academy success predictor scores[6] of admitted applicants.

We examined a number of performance indicators in the three main Academy program areas: academic, physical, and military. In the academic area, we analyzed academic grade point averages. With regard to physical performance, we reviewed physical education grades and success in passing the Academy's swimming requirement. In the military area, we examined a number of elements of the military performance system,

[6]Academy admissions officials derive success predictor scores for Academy applicants based on evaluation of their Scholastic Aptitude Test scores, high school graduation rankings, teacher recommendations, extracurricular activities, and a career interest inventory test. These scores are intended to measure an applicant's likelihood for succeeding at the Academy.

including military performance grades, midshipman officer and company officer rankings,[7] and representation in top student leadership positions.

We also used a variety of indicators of experience with the Academy's primary adjudicatory systems—conduct, honor, and academic review. With regard to the conduct system, we analyzed offense rates for the three most serious conduct offense levels.[8] For the honor system,[9] we examined the percentage of (1) individuals charged with honor offenses, (2) cases dropped, and (3) convictions. We also examined the representation of various subgroups on the honor committees. With regard to academic review, we analyzed the Academic Board's dismissal decisions.[10]

We also reviewed several indicators of overall performance, including attrition rates, reasons for attrition, graduation rates, and class standing at graduation.

We used statistical significance tests and a rule of thumb (called the "four-fifths" test) based on comparison of subgroup percentages to assess whether any observed gender or racial disparities were significant. A detailed description of the kinds of performance indicators used, the source of that data, and the types of tests used to assess differences appears in appendix II.

To assess whether any regularity existed with regard to the direction of observed differences, we counted the number of times each subgroup was lower or higher on each measure for each period we examined. We then

[7]Each semester, midshipmen officers and company officers ranked the midshipmen in their respective companies according to military performance.

[8]Academy conduct offenses are categorized into six levels of seriousness, labeled 1000 through 6000. Sample offenses at each of these levels are shown in appendix III. Levels 1000 through 3000 cover less serious infractions, and punishments are awarded at the company level. Punishments for more serious infractions (levels 4000 through 6000) are awarded at the battalion level or higher. Punishments range from five demerits, 0-5 days of restriction or 0-6 tours (imposed only for freshmen) for a 1000 level offense to 100 demerits, 60 days of restriction/48 tours, loss of 1 year of privileges, and leave or possible dismissal from the Academy for a level 6000 offense.

[9]The honor concept at the Academy states simply that "midshipmen are persons of integrity. They do not lie, cheat or steal." Adjudication under the honor system consists of multiple steps, including honor investigations, Brigade Honor Board hearings, honor hearings before the Commandant, Superintendent's review of cases, and final Academy action, which can include a recommendation for dismissal by the Superintendent.

[10]By the authority of 10 U.S.C. 6963, the Academic Board may dismiss from the Academy midshipmen found deficient. The Board is made up of seven voting members: the Superintendent, the Commandant, the Academic Dean, the directors of the three academic divisions, and the Director of Professional Development. The Board meets once each semester and during the summer to consider the cases of midshipmen who have become academically deficient.

considered the likelihood of getting that observed distribution of lows and highs if there were no systematic differences between the subgroups.

We did not obtain fully coordinated agency comments on the report. However, we provided a draft of this report to senior officials from the Academy and cognizant officials of the Chief of Naval Operations and DOD and discussed it with them. They suggested a number of technical clarifications, which have been incorporated in this report.

We conducted our review from March 1991 to November 1992 in accordance with generally accepted government auditing standards.

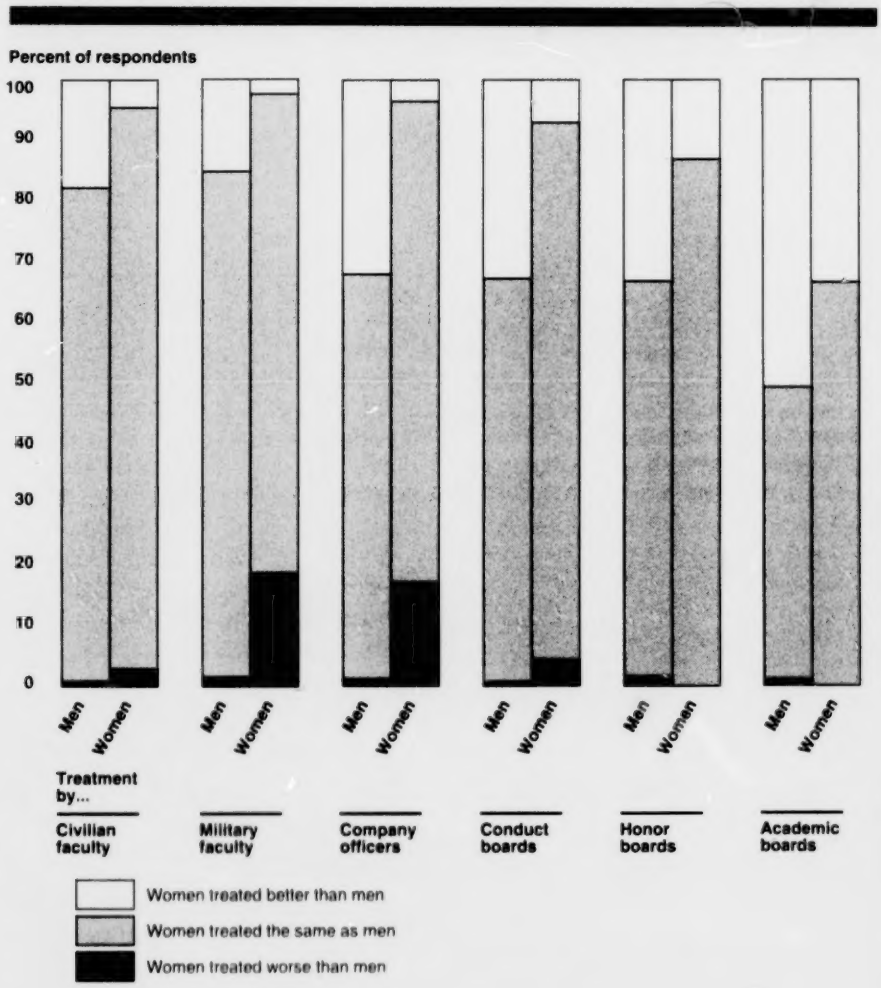
Academy Indicators Reveal Gender Disparities

On average, women have not fared as well as men with regard to qualification rates, semester grade point averages, physical education grades, military performance grade averages, midshipman officer rankings, officer rankings, conduct and honor charge and conviction rates, honor representatives, Academic Board separation rates, attrition rates, motivation-related attrition rates, and overall class standings. The majority of students we surveyed perceived that women were treated the same as men.

Student Perceptions of the Treatment of Women

In our questionnaire, we asked respondents to indicate whether they felt women were treated better than, the same as, or worse than men by military faculty, civilian faculty, company officers, conduct boards, honor boards, and academic boards. The majority of both male and female respondents believed that women were treated the same as men. However, a higher percentage of men than women perceived that women were treated better, and a higher percentage of women than men perceived that they were treated worse (see fig. 2.1).

Figure 2.1: Student Perceptions of Treatment of Women by Various Academy Groups



Source: Responses to GAO's questionnaire.

Majority of Performance Indicators Disfavored Women

Overall, as summarized in table 2.1, we made gender comparisons across 16 indicators, covering all areas of Academy performance. We found significant differences in 12 of the 16 indicators that disfavored females and in 3 of the 16 indicators that disfavored males. A discussion of these indicators and our analysis follows the table.

Table 2.1: Summary of Gender Comparisons

Performance indicator	Data available	Number of comparisons	Comparisons that disfavored men	Comparisons that disfavored women	Men and women equal
Qualification rate (fig. 2.2)	Classes of 1988-91	4	0 (0)	4 (3[c])	0
Admission rate C (see text)	lasses of 1988-91	4	1 (0)	2 (1[b])	1
Success predictor scores (fig. 2.3)	Classes of 1988-91	4	4 (4[b])	0 (0)	0
Academic grade point averages, by semester (fig. 2.4)	Classes of 1988-91	8	4 (2[b])	4 (2[b])	0
Physical education grades (see text)	Academic years 1990-91, 2 semesters	2	0	2[d]	0
Military performance grades, by semester (see text)	Classes of 1988-91	32	4 (0)	28 (4[b])	0
Midshipman officer rankings (fig. 2.5)	Classes of 1988-90	24	1 (0)	23 (14[b])	0
Company officer rankings (fig. 2.5)	Classes of 1988-90	24	6 (0)	18 (4[b])	0
Representation among 3-stripers (fig. 2.6)	Classes of 1983-91	9	5	4[d]	0
Fourth class conduct offenses (4000-6000 levels) (fig. 2.7)	Academic years 1988-90	9	4 (0)	5 (2[c])	0
Honor charge, drop, and conviction rates (fig. 2.8 and 2.9)	Academic years 1990-91	6	0 (0)	6 (5[a])	0
Honor representation rate (see text)	Academic year 1991, 2 semesters	2	0 (0)	2 (2[a])	0
Academic Board separation rate (fig. 2.10)	Academic years 1988-91	1	1 (1[a])	0 (0)	0
Attrition rate (fig. 2.11)	Classes of 1980-91	12	0 (0)	12 (8[c])	0
Voluntary resignations (see text)	Combined classes of 1980-94	1	0 (0)	1 (1[b])	0
Order of merit top quartile rate (see text)	Classes of 1988-91	4	2 (0)	2 (1[b])	0

Note: ( ) indicates the number of significant differences using one or both types of tests.

[a] Significant using 4/5s test.

[b] Significant using statistical significance test.

[c] Significant using statistical significance and 4/5s tests.

[d] Unable to test significance due to data limitations.

Some Gender Disparities Found in Qualification Rates, but Admission Rates Were Comparable

Women applied for admission to the Academy at a much lower rate than men and were less likely to be found qualified. Admission rates for qualified male and female applicants were basically the same. Average success predictor scores were significantly higher for women than for men.

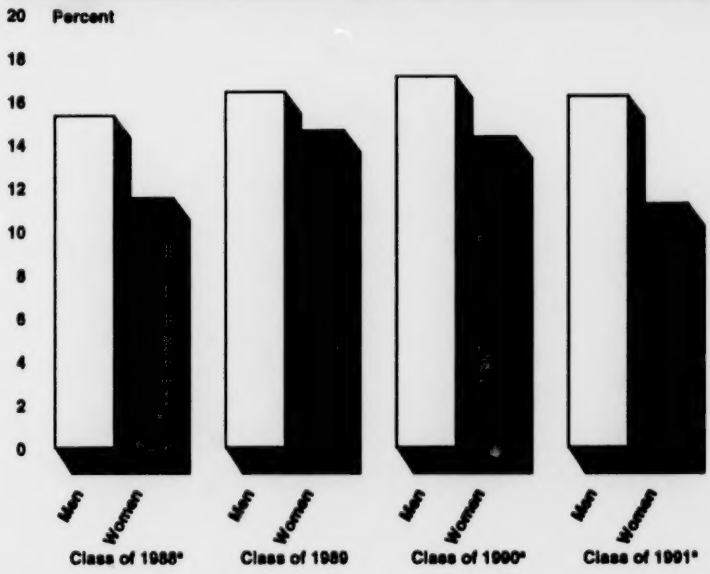
Qualification Rates

Admission standards, with the exception of some allowances for physical differences, are the same for women and men. Not all applicants meet the Academy's admission standards. Applicants who meet the academic and leadership potential criteria are called qualified nominees.

Women applied for admission to the Academy at a much lower rate than men. For each of the classes of 1988-91, male applicants were consistently designated as qualified nominees at higher rates than females (one gender comparison for each of four classes).[1] The higher rate for men was significant for the classes of 1988 and 1991, as shown in figure 2.2.

[1]For presentation purposes, we do not always illustrate each comparison that we made because the pattern across semesters or class years was often similar. Where we made comparisons for multiple years or semesters, we parenthetically note the numbers of comparisons we made.

Figure 2.2: Percentage of Applicants Designated as Qualified Nominees by Gender



*Difference was significant using one or more tests.

Source: GAO analysis of Academy records.

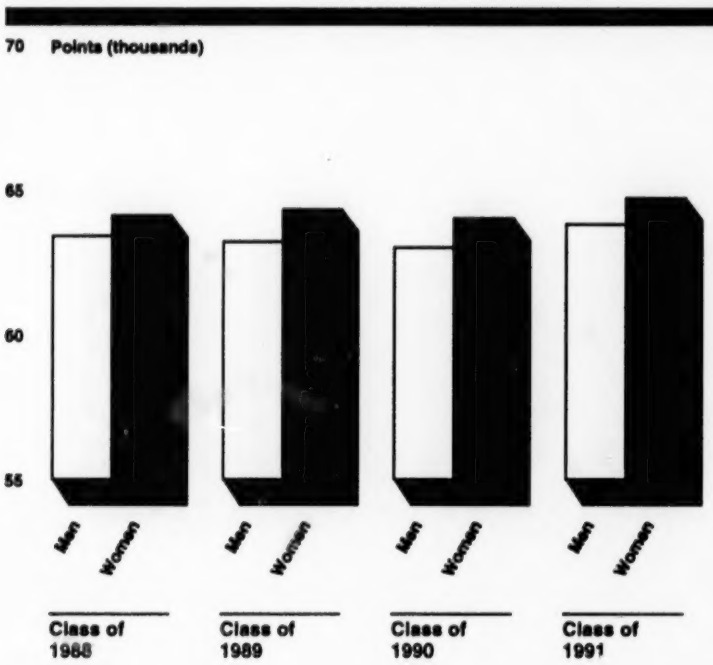
Admission Rates

For the classes of 1988-89, we found that qualified male nominees were admitted at higher rates than qualified females. For the class of 1990, the admission rate for qualified women was slightly above the rate for qualified men. For the class of 1991, qualified men and women were admitted at the same rate. The higher rate for admitting men was significant for the class of 1988 (one comparison for each of four classes).

Success Predictor Scores

Our review of the predictor scores for midshipmen admitted to classes 1988-91 showed that the average predictor scores were higher for women than for men and that the differences were significant (see fig. 2.3, one comparison for each of four classes). The scholastic prediction system used in the admissions process is aimed at identifying applicants most likely to perform well at the Academy. If predictor scores are considered valid indicators of success, we would expect that for these classes, on average, females would be more successful at the Academy than males.

Figure 2.3: Average Predictor Scores by Gender



Note: Differences were significant using one or more tests for each class.

Source: GAO analysis of Academy records.

Women Were Generally Less Successful Than Men in Academic, Physical, and Military Performance

In general, we found the following:

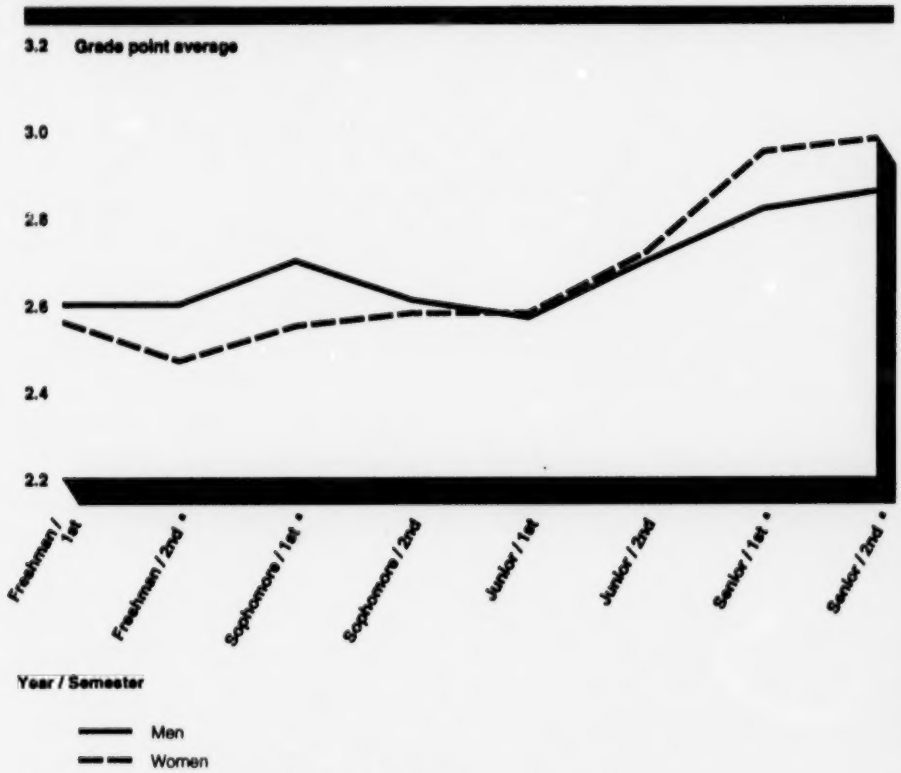
- Men got higher academic semester grades than women as freshmen and sophomores, but women got higher grades than men as seniors.
- Women's average physical education grades were lower than men's.
- Women generally got lower average military performance semester grades than men.
- Women were generally selected for midshipmen leadership positions at a rate proportional to their representation in the brigade.

Academic Grades of Females Began Lower Than Those of Males but Later Exceeded Them

We combined the classes of 1988-91 together and looked at the academic grades on a semester-by-semester basis and found that men received significantly higher grades than women in their freshman and sophomore years, while women got significantly higher grades than men in their

senior year (see fig. 2.4). This analysis involved gender comparisons for eight semesters for four classes, totaling 32 comparisons. The semester grades for the four classes have been combined in figure 2.4 for illustrative purposes.

Figure 2.4: Semester Grade Point Averages by Gender



*Difference was significant using one or more tests.

Source: GAO analysis of Academy records.

Female Physical Education Grades Were Slightly Below Those of Males

Physical education standards at the Academy were derived on the basis of historical achievement of separate gender groups over time, and they are intended to compensate for the physiological differences between men and women. For example, the standard for a perfect score of 100 for the 1.5 mile run is 1 minute and 10 seconds less for men than for women; the physical readiness test standard for the maximum points for push-ups is 35

more for men than women; and the minimum time for the obstacle course is 45 seconds slower for women. Additionally, women are required to take self-defense and combative grappling instead of the required boxing and wrestling for men. According to a March 1991 assessment of the Academy's equal opportunity climate, many males perceived these differences in physical education standards as favoritism toward women.

Despite the perception of favoritism in physical education standards toward women, the overall average physical education grades for academic year 1989-90 were 2.67 for men and 2.52 for women, a difference of 0.15 points (or about 5.6 percent lower for women). For academic year 1990-91, the average physical education grades were 2.69 for men and 2.55 for women, a difference of 0.14 points (or about 5.2 percent lower for women). Analysis of the physical education grades involved one comparison for each of two semesters for which data were available.

Female Military Performance Was Slightly Below Male Military Performance

The 36 company officers are each responsible for 100 to 120 midshipmen. One of their key responsibilities is to evaluate the military performance of the midshipmen in their charge. Military performance data showed that women generally received lower grades and rankings than men, but were selected for leadership positions at the same rate as men.

Military Performance Grades

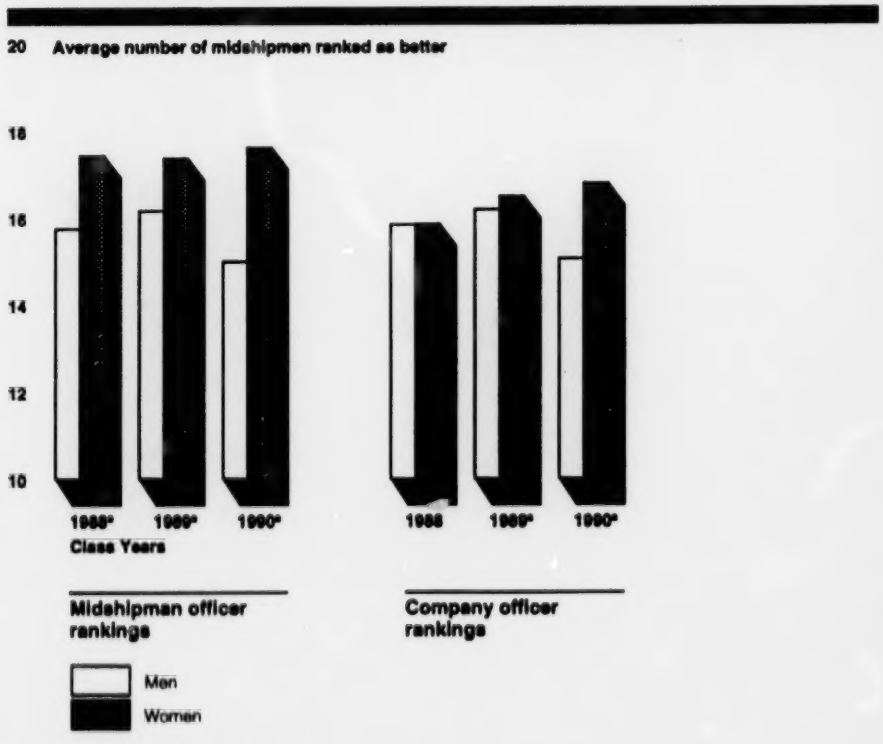
In reviewing all eight semesters of military performance data for the classes of 1988-91, we found that women consistently received lower average military performance grades than men as freshmen (gender comparisons for eight semesters for four classes, totaling 32 comparisons). In 28 of the gender comparisons, women had lower military performance grades. The differences were greatest in their freshman year, but the differences generally decreased over the 4-year period. The differences were significant when viewed over the eight-semester period for each of the four classes.

Midshipman Officer and Company Officer Rankings

The rankings that midshipmen receive from their midshipman officers and company officers contribute to their semester military performance grade. A midshipman's rank could range from 1 (best) to about 30-36 (worst), depending on the number of midshipmen of their same class in the company. Figure 2.5 shows that the average ranking received from midshipmen officers was lower for women than men. Further, the

midshipman officer rankings showed greater differences between men and women than the company officer rankings (see fig. 2.5). The gender differences in average rankings by midshipman officers and company officers generally were significant. This analysis involved gender comparisons for eight semesters for three classes, totaling 24 comparisons. The semester rankings by midshipman officers and company officers for the three classes have been combined in figure 2.5 for illustrative purposes.

Figure 2.5: Average Midshipman Officer and Company Officer Rankings by Gender, Classes of 1988-90



Note: A ranking of number 1 is best.

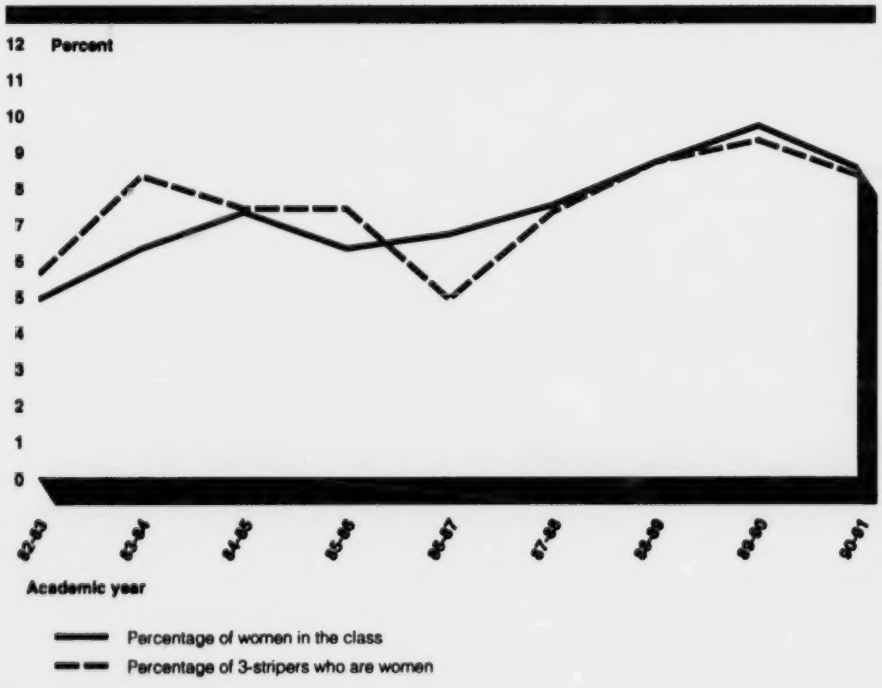
*Difference was significant using one or more tests.

Source: GAO analysis of Academy records.

3-Striper Representation

In reviewing data on midshipman leadership positions held by gender for academic years 1983-91, we found that from academic years 1983-87 female representation at the "3-striper" level (midshipman officer rank of lieutenant and above) was both above and below female representation in the brigade. For academic years 1988-91, female representation in these positions was about equal to their representation in the brigade (see fig. 2.6). This analysis involved one comparison for each of the 9 years for which data were available.

Figure 2.6: Representation of Women in 3-Striper Positions



Source: Academy records.

Women Had Higher Disciplinary and Honor Offense Rates, but Lower Academic Dismissal Rates

In five of nine comparisons, we found that female freshmen were convicted at significantly higher rates than male freshmen in the conduct system. In the other four comparisons, the male rates were not significantly higher than the female rates. We also found that women were

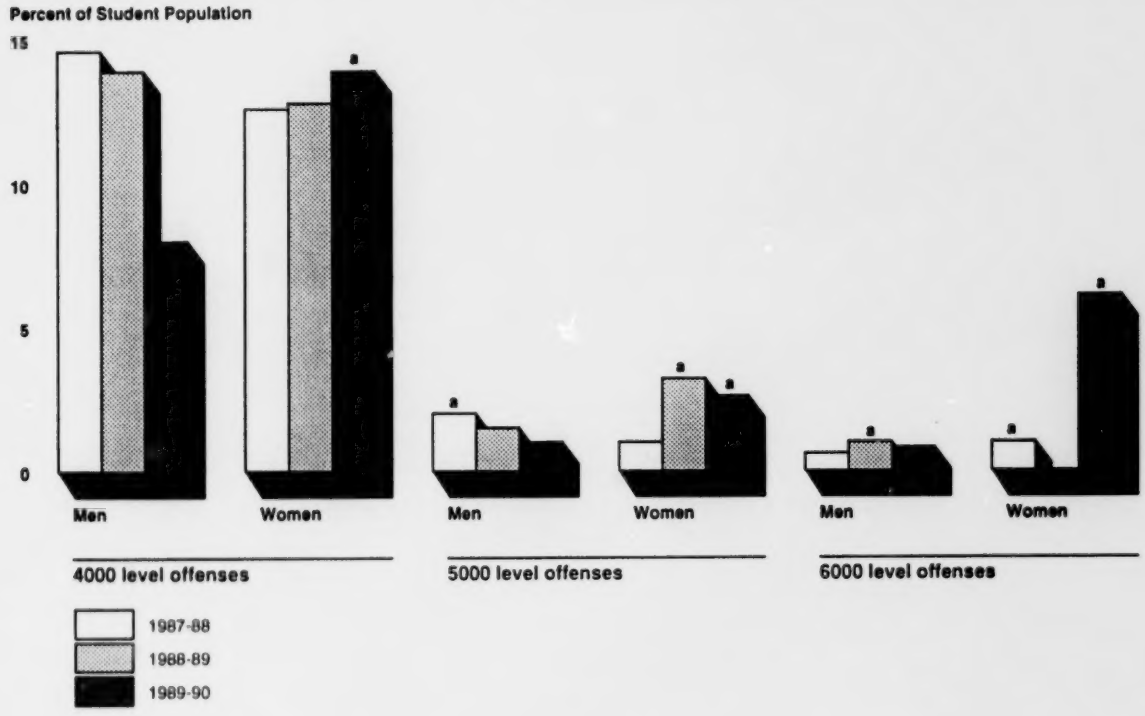
charged at higher rates than men in the honor system. This analysis involved gender comparisons for each of 2 years for honor case charges, drops, and convictions, and each of two semesters of honor representatives, totaling eight comparisons. In academic year 1991, the only year for which data were available, the number of women who served as honor representatives was not in proportion to their representation in their classes.

Over the last 4 years, the Academic Board had separated women at a significantly lower rate than men.

Female Freshmen Were Convicted of Conduct Offenses at a Higher Rate Than Male Freshmen

In examining data on Academy conduct cases comprising the three highest level offenses (4000, 5000, and 6000 levels) for academic years 1988-90, we found a number of gender disparities. This analysis involved gender comparisons for each of the three conduct levels for each of the 3 years, totaling nine comparisons. In five out of the nine comparisons, the conviction rate for female freshmen significantly exceeded the male rate. The conduct data for sophomores, juniors, and seniors did not reveal gender disparities. The most striking differences were found in academic year 1989-90, where female freshmen had higher conviction rates than males at all three of the most serious offense levels. For example, in academic year 1989-90, 7 of 115 (6.1 percent) female freshmen were convicted of the most serious level of conduct offenses (such as drinking or being under the influence of alcohol while on duty), compared to 9 of 1,155 (0.8 percent) male freshmen (see fig. 2.7).

Figure 2.7: Fourth Class Midshipman Conduct Offense Conviction Rates by Gender



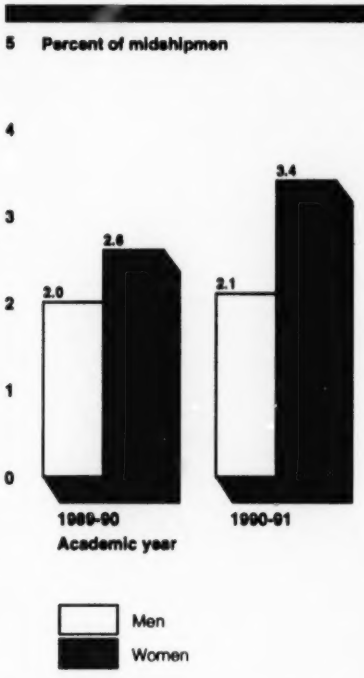
[a]Difference was significant using one or more tests.

Source: GAO analysis of Academy records.

Women Were Charged and Convicted of Honor Offenses at a Higher Rate Than Men

Our review of the honor cases in academic years 1990 and 1991 showed that women were charged with honor offenses at a higher rate than men (see fig. 2.8). During academic year 1991, 14 of 412 (3.4 percent) women were charged with an honor offense, compared to 82 of 3,980 (2.1 percent) men. In addition, women charged with honor offenses had their cases dropped at a lower rate than men. Further, women who went before an honor board were found guilty at a higher rate than men (see fig. 2.9). This analysis involved comparisons for each year. All but one of these differences was significant.

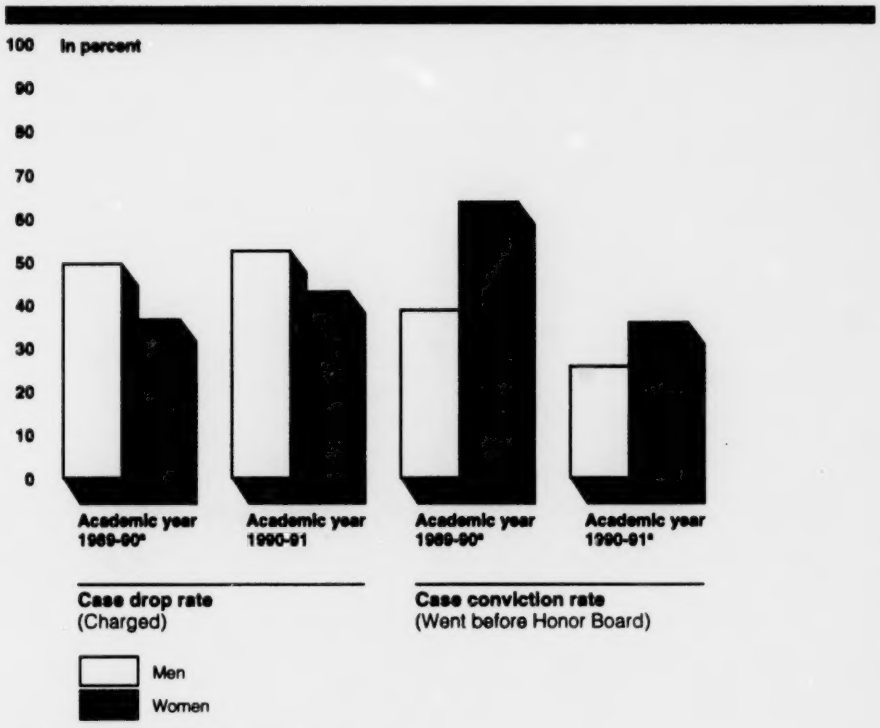
Figure 2.8: Honor Violation Charge Rates by Gender



Note: Differences were significant using one or more tests for each year.

Source: GAO analysis of Academy records.

Figure 2.9: Honor Case Drop and Conviction Rates by Gender



[a]Difference was significant using one or more tests.

Source: GAO analysis of Academy records.

Women's Participation as Honor Representatives Was Disproportionately Low

Serving as an honor representative is one of many leadership positions available to first and second class midshipmen. Honor representatives play a key role in investigating alleged honor offenses and deciding guilt or innocence in Brigade Honor Board proceedings. For academic year 1991,[2] women's participation as honor representatives was disproportionately low. Three of the 79 honor positions for the class of 1991 (3.8 percent) were filled by women, while the female composition of that class was 8.7 percent. Three (3.8 percent) of the 79 honor positions for the class of 1992 were filled by women, while 9.4 percent of the class were women. These differences in representation by men and women were significant. According to an Academy study, the low representation could be attributed in part to the high proportion of female varsity athletes (more

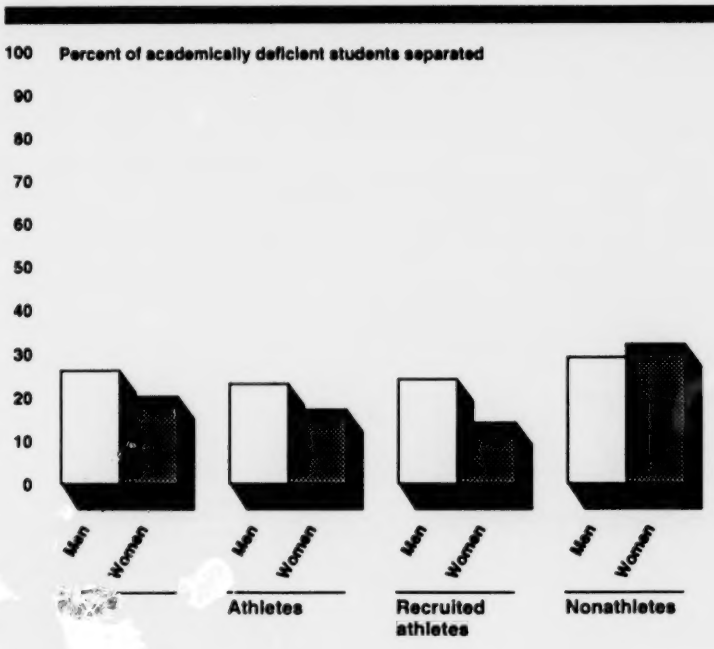
[2]According to the Academy Ethics Officer, historical data on honor representatives by gender and race/ethnicity do not exist prior to academic year 1990-91.

than 50 percent for females compared to 25 percent for males). Another Academy study noted that since the varsity women's team captains hold midshipman officer positions while their sport is in season, a sizable percentage of senior women remove themselves from competition for regular midshipman officer positions.

Women Separated by the Academic Board at Significantly Lower Rates Than Men

Our review of Academic Board separation decisions on academic deficiency cases for academic years 1988-91 indicated several gender- and athlete-related differences. This analysis involved one gender comparison for the Academic Board decisions data set that combined the 4 academic years. In general, the Academic Board dismissed academically deficient women at a lower rate than academically deficient men, 20 percent compared to 26 percent (see fig. 2.10). This difference was significant in favor of women.

Figure 2.10: Academic Board Separation Rates by Gender



[a]Diff[illegible] significant using one or more tests.

Source: GAO analysis of Academy records.

The results of the questionnaires showed a high proportion of midshipmen (88 percent), faculty (73 percent), and commandant's staff (67 percent) perceived that athletes received preferential treatment from the Academic Board. Since a higher proportion of females were athletes, we looked to see whether the lower dismissal rate of women was related to athlete status. We found that female athletes were dismissed at a lower rate than male athletes. These differences were greatest for female recruited athletes.[3] However, females who were not athletes were dismissed at a higher rate than males who were not athletes. According to Academy officials, these Academic Board decisions reflect the discretion Board members exercised in considering many factors such as value of the athlete's contribution to the Academy, amount of effort the student is making to improve grades, prior performance and conduct, motivation and support the student may receive from athletic participation, and recommendations from officers and faculty members.

Women Left the Academy at Higher Rates Than Men and Graduated Lower in Their Class

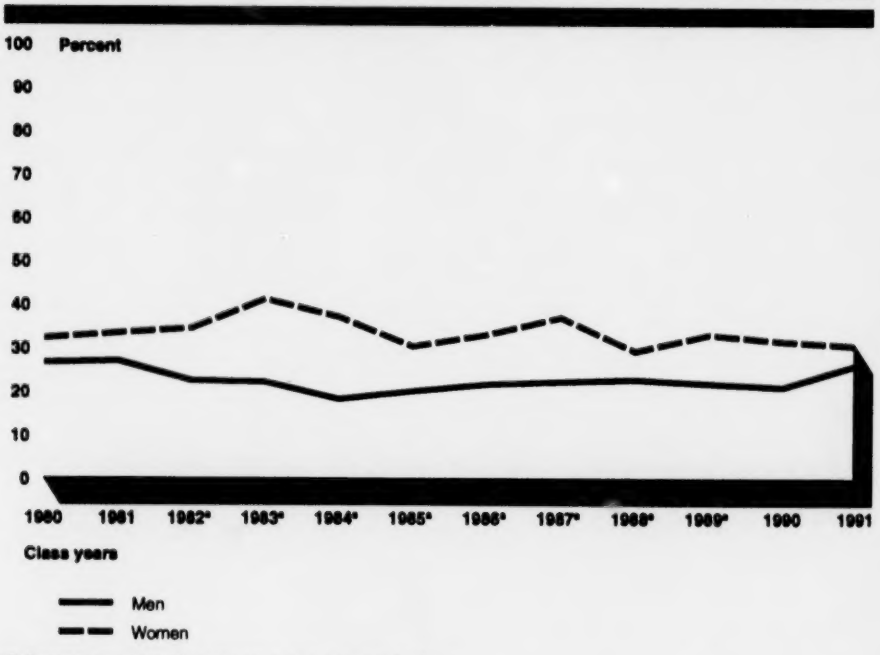
We found that women were leaving the Academy at higher rates than men and a higher percentage of women cited motivation-related reasons for leaving than men. Also, in two of four classes, we found that proportionally fewer women graduated in the upper quarter of their class than men.

Attrition Rates

For the classes of 1980-91, generally, female attrition was higher than male attrition, as shown in figure 2.11. This analysis involved one gender comparison for each of the 12 classes. The differences between the male and female rates of attrition met the tests for significance in the classes of 1982 through 1989.

[3]The distinction between the usage of the terms "athlete" and "recruited athlete" differentiates between midshipmen who compete to play a varsity sport after being admitted to the Academy and those who were recruited to play a varsity sport before being admitted.

Figure 2.11: Attrition Rates by Gender



*Difference was significant using one or more tests.

Source: GAO analysis of Academy records.

Voluntary Resignations

According to the registrar, Academy personnel assign a reason from a set of attrition categories when a midshipman voluntarily leaves the Academy. Our examination of the reasons for attrition covering all classes from 1980 through 1994 indicated that motivation-related reasons were assigned to a significantly higher percentage of women who voluntarily resigned than men (66 percent compared to 55 percent). This analysis involved one gender comparison of the reasons for attrition data set that combined the classes of 1980-94.

Order of Merit Top Quartile

According to an Academy official, in approximately February of each year, Academy seniors make their service selections (roughly analogous to choosing a career field) based on the order of their class ranking at the end of the first semester of their senior year. The class ranking is cumulative over 4 years and is comprised of about 70 percent for academic performance and 30 percent for nonacademic performance of which military performance is the principal component. Achieving a high class

ranking is important because it means a midshipman is more likely to be able to select a first choice of a career field before the available positions are filled. According to the Academy official in charge of the service selection program, if a midshipman ranks within the first 100 students in the class, that midshipman would most likely get his/her first choice of career field.

In reviewing the class standings for the classes of 1988-91, we found that in the classes of 1990 and 1991, there were proportionally fewer women in the upper quarter of their classes than men. This analysis involved one gender comparison for each of the classes. The difference in the distribution of men and women for the class of 1990 was significant. For the classes of 1988 and 1989, there were proportionally fewer men in the upper quarter of their classes than women. These differences in the distribution of men and women were not significant.

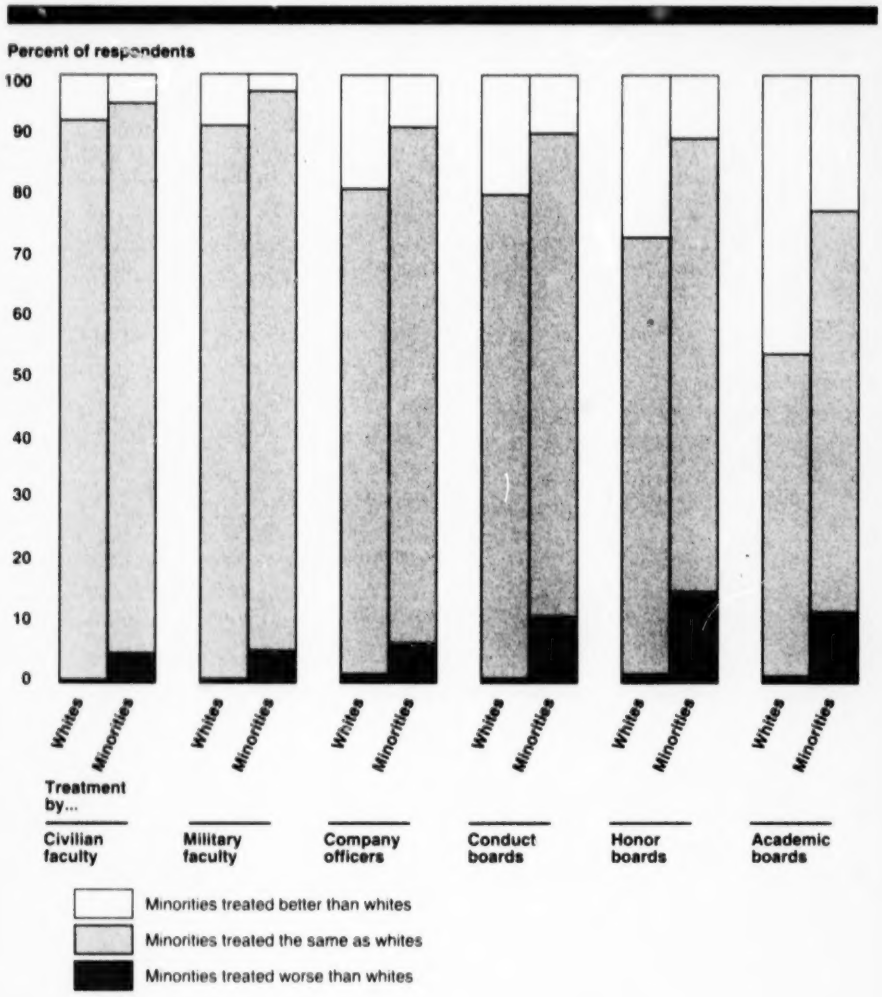
Academy Indicators Reveal Racial Disparities

We found that minorities, in general, had lower predictor scores and did not fare as well as whites in qualification and admission rates, semester grade point averages, military performance grade averages, midshipman officer rankings, officer rankings, conduct conviction and honor violation charge and conviction rates, honor representatives, attrition rates, overall class standings, and academic discharge rates. The differences in these indicators were often significant. There were no racial disparities in Academic Board separation rates. While the majority of midshipmen who responded to our questionnaire perceived that minorities were treated the same as whites, a higher percentage of minorities than whites believed that minorities received worse treatment.

Student Perceptions of the Treatment of Minorities

In our questionnaire, we asked respondents to indicate whether they believed minorities were treated better than, the same as, or worse than whites by civilian faculty, military faculty, company officers, conduct boards, honor boards, and academic boards. The majority of both white and minority midshipmen believed that minorities were treated the same as whites. However, a higher percentage of whites than minorities perceived that minorities were treated better, and conversely, a higher percentage of minorities perceived that they were treated worse (see fig. 3.1).

Figure 3.1: Student Perceptions of Treatment of Minorities by Various Academy Groups



Source: Responses to GAO's questionnaire.

Majority of Performance Indicators Disfavored Minorities

Overall, as summarized in table 3.1, we made racial comparisons across 17 indicators, covering all areas of Academy performance. We found significant differences in 12 of the 17 indicators that disfavored minorities and in 1 of the 17 indicators that disfavored whites. A discussion of these indicators and our analysis follows the table.

Table 3.1: Summary of Racial Comparisons

Performance indicator	Data available	Number of comparisons	Comparisons that disfavored whites	Comparisons that disfavored minorities	Minorities and whites equal
Qualification rate (fig. 3.2)	Classes of 1988-91	4	0 (0)	4 (2[b])	0
Admissions rate (fig. 3.3)	Classes of 1988-91	4	3 (2[b])	1 (0)	0
Success predictor score (fig. 3.4)	Classes of 1988-91	4	0 (0)	4 (4[b])	0
Academic grade point averages, by semester (fig. 3.5)	Classes of 1988-91	8	0 (0)	8 (8[b])	0
Physical education grades (fig. 3.6)	Academic year 1990, 1 semester	1	0	1[d]	0
Swimming sub-squad representation (see text)	Academic year 1991, 1 semester	1	0	1[d]	0
Military performance grades, by semester (see text)	Classes of 1988-91	32	0 (0)	32 (28[b])	0
Midshipman officer rankings (fig. 3.7)	Classes of 1988-90	24	0 (0)	24 (17[b])	0
Company officer rankings (fig. 3.7)	Classes of 1988-90	24	0 (0)	24 (20[b])	0
Representation among 3-stripers (fig. 3.8)	Classes of 1983-91	9	0	9[d]	0
Fourth class conduct offenses (4000-6000 levels) (fig. 3.9)	Academic years 1988-90	9	3 (0)	5 (5[c])	1
Honor charge, drop, and conviction rates (fig. 3.10 and 3.11)	Academic years 1990-91	6	0 (0)	6 (4[c])	0
Honor representative rate (see text)	Academic year 1991, 2 semesters	2	0 (0)	2 (2[a])	0
Academic Board separation rate (fig. 3.12)	Combined academic years 1988-91	1	0 (0)	1 (0)	0
Attrition rate (fig. 3.13)	Classes of 1988-91	12	0 (0)	12 (7[c])	0
Academic discharge rate (see text)	Combined classes of 1980-94	1	0 (0)	1 (1[c])	0
Order of merit top quartile rate (see text)	Classes of 1980-91	4	0 (0)	4 (4[b])	0

Note: ( ) indicates the number of significant differences using one or both of the types of tests.

[a] Significant using 4/5s test.

[b] Significant using statistical significance test.

[c] Significant using statistical significance and 4/5s tests.

[d] Unable to test significance due to data limitations.

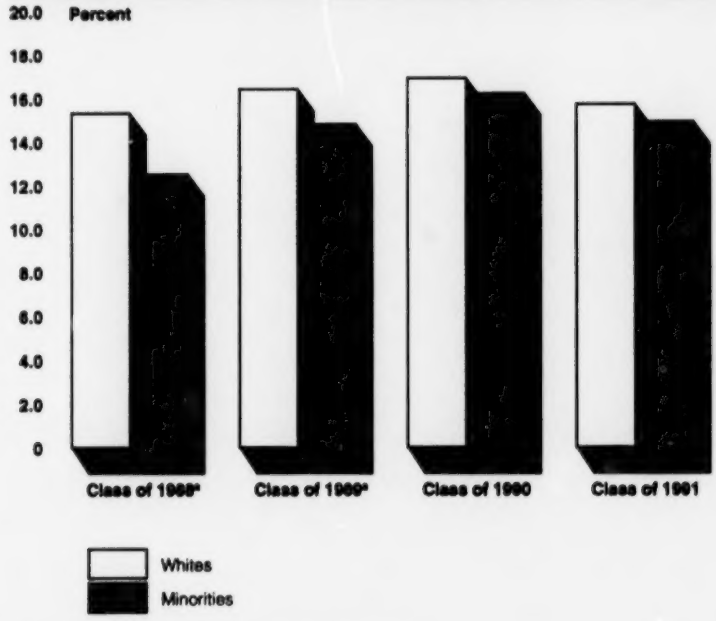
Admission Rates Were Higher to Some Extent for Minorities Than Whites

Minorities applied for admission to the Academy at a much lower rate than whites, and a lower percentage of the minorities who did apply were found to be fully qualified. However, a higher percentage of minorities who did qualify were admitted to the Academy than their white counterparts. Average success predictor scores were significantly higher for whites than for minorities.

Qualification Rates

For the classes of 1988-91, white applicants were consistently designated as qualified nominees at higher rates than minorities (four comparisons, one for each of four classes). The differences were significant for the classes of 1988 and 1989, as shown in fig. 3.2.

Figure 3.2: Percentage of Applicants Designated as Qualified Nominees by Race



[a]Difference was significant using one or more tests.

Source: GAO analysis of Academy records.

Admissions Rates

Qualified minorities were admitted at a higher rate than qualified whites in three of the four classes reviewed (one comparison for each of four

classes). For the classes of 1989 and 1990, the higher admission rates for minorities were significant, as shown in figure 3.3.

Figure 3.3: Admission Rates for Qualified Nominees by Race, Classes of 1988-91

[a]Difference was significant using one or more tests.

Source: GAO analysis of Academy records.

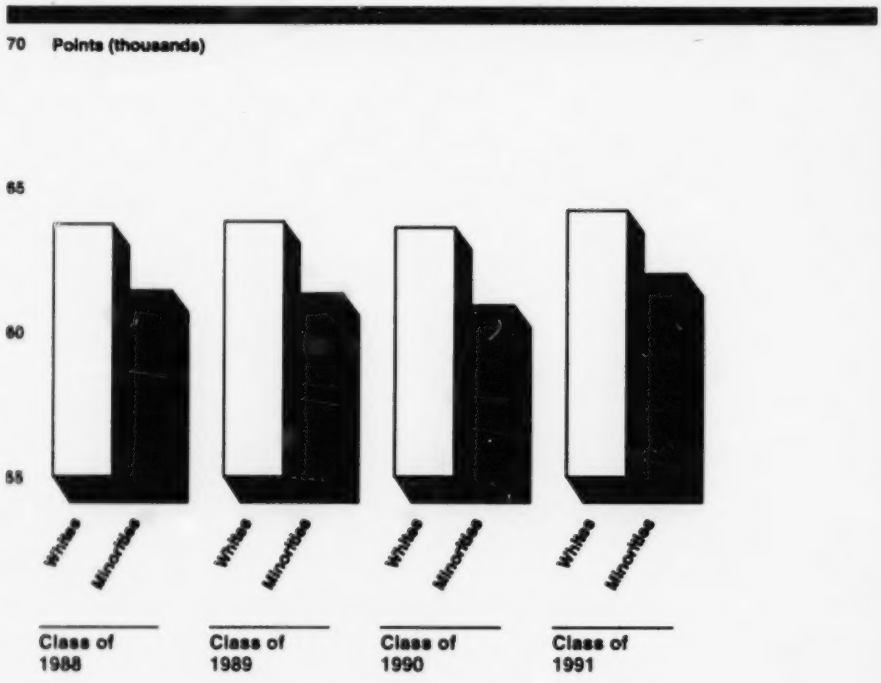
Because of the lower qualification rate of minorities, the Academy makes offers of appointment to the majority of qualified minorities to achieve the Chief of Naval Operations' commissioning goals for minorities. However, all those admitted have been judged fully qualified.

Success Predictor Scores

Our review of the predictor scores for midshipmen in the classes of 1988-91 showed that the average predictor score was significantly higher for whites than it was for minorities. (See fig. 3.4, one racial comparison for each of four classes.)[1]

[1]For presentation purposes, we do not always illustrate each comparison that we made because the pattern across semesters or class years was often similar. Where we made comparisons for multiple years or semesters, we parenthetically note the numbers of comparisons we made.

Figure 3.4: Average Predictor Scores by Race



Note: Differences were significant using one or more tests for all all four classes.

Source: GAO analysis of Academy records.

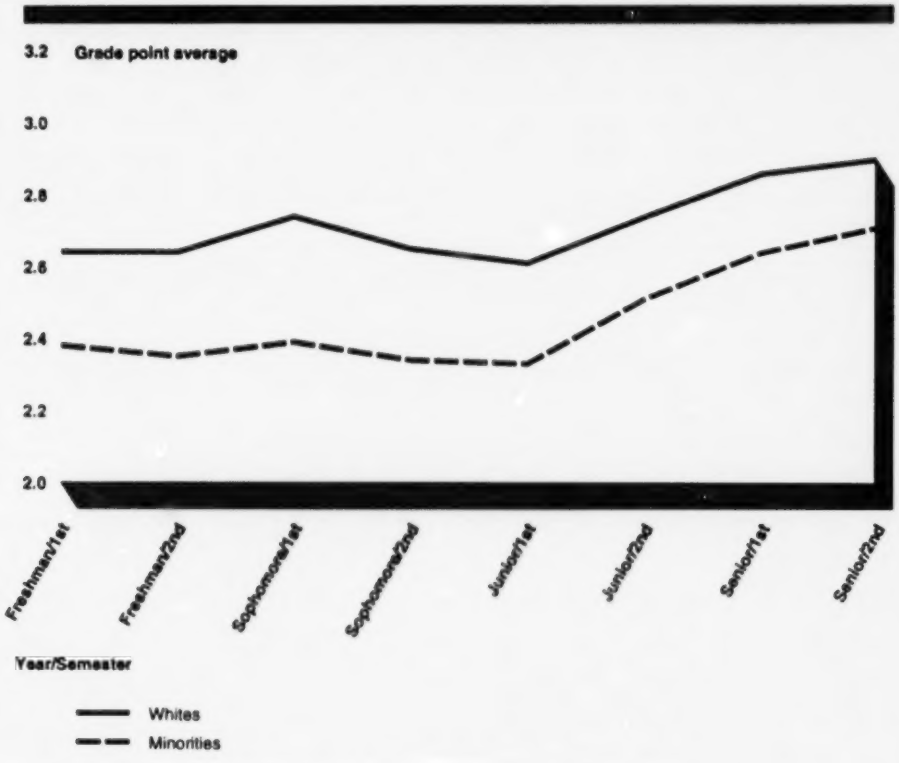
Minorities Were Less Successful Than Whites in Academic, Physical, and Military Performance

Consistent with Academy success predictors, academic performance grades of minorities were below those of whites. In addition, physical and military performance grades were below those of whites. Moreover, minorities were selected for midshipmen leadership positions at a rate below their proportional representation in the brigade.

Minority Academic Grades Were Lower Than Those of Whites

In each of the four classes reviewed, the semester grade point averages of whites were consistently significantly higher than minorities'. This analysis involved racial comparisons for eight semesters for four classes. The semester grades for the four classes have been combined in figure 3.5 for illustrative purposes.

Figure 3.5: Semester Grade Point Averages by Race, Classes of 1988-91



Note: Differences were significant using one or more tests for each year/semester.

Source: GAO analysis of Academy records.

To assess whether the observed differences between the academic performance of white and minority midshipmen were due to differences in academic potential that existed at the time they entered the Academy, we performed a series of regression analyses.[2] For the classes of 1988, 1989, 1990, and 1991, we ran regression analyses on the midshipmen's cumulative grade point averages at the end of each of their eight

[2]A regression analysis is a statistical technique that allows the effects of multiple predictor variables to be simultaneously assessed. By entering the predictor variables into the regression analysis in separate steps, the unique contribution of a predictor variable to the variation in a criterion variable can be determined while the effects of all other measured predictor variables are controlled.

semesters. Entrance predictor (wholeperson multiple) scores[3] were entered into the regression equation as the first step, with race[4] entered as a second step. Both variables were entered in each equation regardless of any other criteria so that the direction of the relationship could be determined. This resulted in 32 separate regression analyses (8 for each of the 4 classes) where the independent effect of race could be assessed.

Overall, the Academy's entrance predictor scores were able to account for a relatively low proportion (17 to 33 percent) of the total variation in semester grade point averages. After controlling for differences in entrance predictor scores, race still explained a small (0.3 to 1.8 percent) but statistically significant (at the 95-percent level of confidence) proportion of the variance in grade point averages in 29 of the 32 regression analyses. All 32 regression coefficients were negative and ranged from –0.05 to –0.16. The average regression coefficient for race across the 32 regressions was about –0.10, meaning that the grade point average of a minority midshipman averaged 0.10 lower than that of a white midshipman with a comparable entrance predictor score. Thus, race was correlated with academic performance beyond the difference that could be explained by differences in entrance predictor scores.

Minority Physical Education Grades Were Lower Than Those of Whites

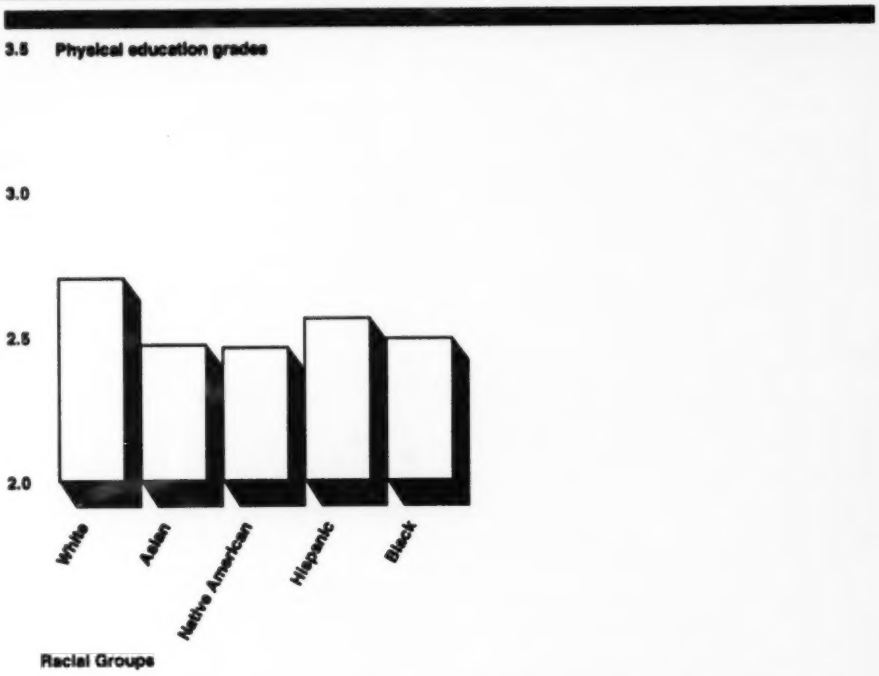
The average physical education grades received by each of the various minority groups were lower than those of whites during the spring semester of 1990, the only semester for which we have information, as shown in figure 3.6. At that time, physical education grades were based on grades received in the core courses[5] but not elective courses.

[3]We used the wholeman multiple scores as an independent variable in this analysis because they are the main indicator that Academy officials use to predict academic success. We did not examine the development of this measure, and we make no assumptions about its validity in the admissions process.

[4]Race was coded into two groups: minorities (including blacks, Hispanics, Asians, and Native Americans) and whites.

[5]According to the 1991 Academy physical education requirements, the core courses for all midshipmen are swimming, gymnastics, personal conditioning, weight training, judo, and hand-to-hand combat. Additional core courses are boxing and wrestling for men and self-defense and combative grappling for women.

Figure 3.6: Physical Education Grades by Race



Source: Academy Command Managed Equal Opportunity Assessment Team Report, 1991.

According to a physical education official, until academic year 1991-92, midshipmen received letter grades for only the core physical education courses. Only swimming, gymnastics, and physical fitness tests were required for every midshipman, and swimming was an area in which we found significant disparities by race.

The Academy's swimming requirements become increasingly more demanding from fourth class year to second class year. In addition, the swimming requirements are set at a higher level than the Navy-wide swimming requirements. According to Academy officials, the fact that the Academy's swimming requirements are higher than the Navy's requirements is consistent with the Academy's policy of setting higher standards for its officer candidates than the other officer commissioning programs. Those midshipmen unable to pass the swimming test are

required to take additional swimming training, referred to as the "subsquad" for swimming.

Blacks attended the subsquad at a significantly higher proportion than the 6.6 percent blacks represented in the brigade in academic year 1990-91. In the spring of 1991, 54 percent of the subsquad were minorities (blacks—40 percent, foreign nationals—8 percent, and Hispanics, Filipinos, and Asians—2 percent each). This analysis involved one racial comparison for one semester.

In our questionnaire survey of midshipmen, 37 percent of the minority respondents indicated that they had had difficulty meeting the Academy's swimming requirements, compared to 19 percent of the white respondents.

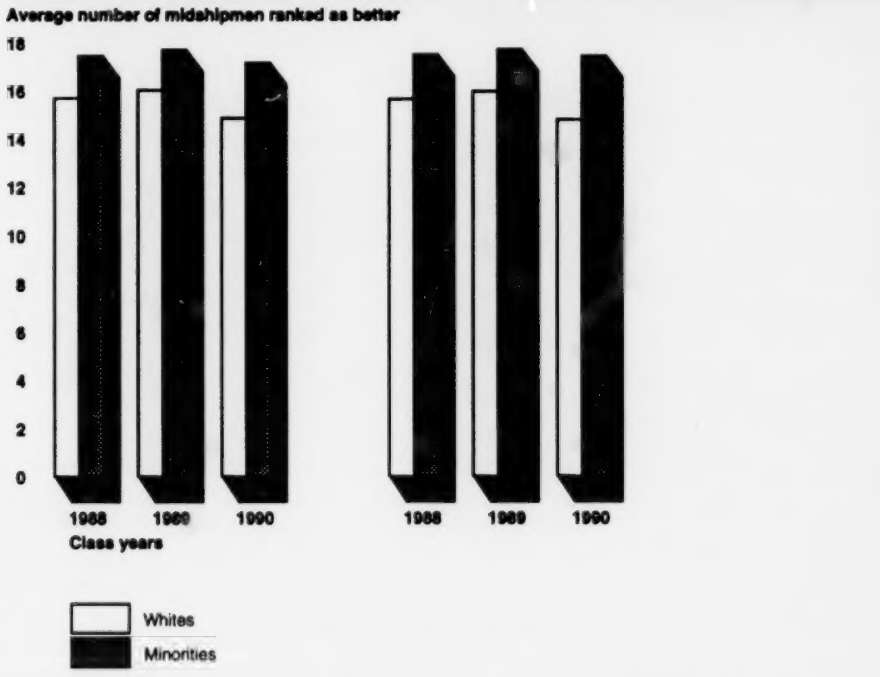
Minority Military Performance Grades Were Lower Than Those of Whites

In reviewing eight semesters of military performance data for each of the classes of 1988-91, we found that minorities consistently received lower average military performance grades than whites. This analysis involved racial comparisons for eight semesters for four classes. The differences met the test for significance for each class in six or more of the eight semesters.

Minority Striper and Company Officer Rankings Were Lower Than Those of Whites

Our review of these rankings for the classes of 1988-90 showed that minorities, on average, received worse rankings than whites. This analysis involved racial comparisons for eight semesters for three classes. The semester rankings by midshipman officers and company officers for the three classes have been combined in figure 3.7 for illustrative purposes. This figure shows that minorities generally received lower rankings than whites from both midshipman officers and company officers. The racial differences in rankings by midshipman officers and company officers were significant.

Figure 3.7: Average Midshipman Officer and Company Officer Rankings by Race



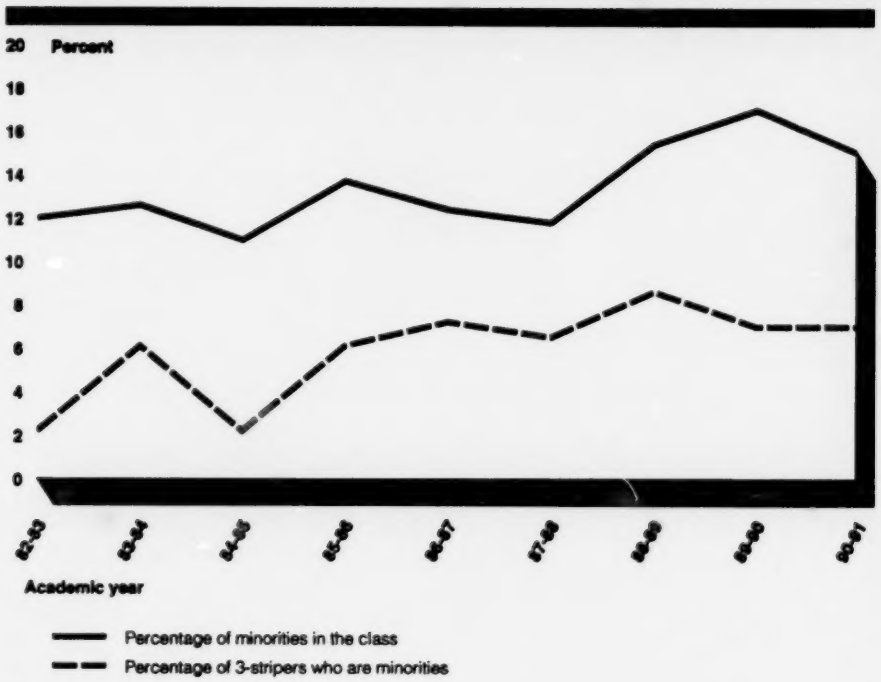
Notes: A ranking of number 1 is best. Differences were significant using one or more tests for each year.

Source: GAO analysis of Academy records.

Minority 3-Striper Representation Was Proportionally Lower Than That of Whites

In reviewing data on the midshipman leadership positions held by minorities for academic years 1983-91, we found that minority representation at the 3-striper level was consistently below their proportional representation in the classes (see fig. 3.8). This analysis involved one racial comparison for each of the 9 years. For example, for academic year 1983, although minorities comprised 12 percent of the class, they held only about 2 percent of the 3-striper positions. For academic year 1991, minorities comprised 15 percent of the class and held about 7 percent of the 3-striper positions.

Figure 3.8: Representation of Minorities in 3-Striper Positions



Source: Academy records.

According to Academy officials, during the classes of 1990-93, minorities were proportionally represented in striper command positions but not in striper staff positions.[6] One Academy official indicated that most midshipmen who assume leadership positions have experienced a lowering of their cumulative grade point average during their leadership tour due to the added responsibilities. Because of this fact and the Commandant's concern that a midshipman not fail a course while serving in a leadership position, Academy officials told us that part of the selection process for these positions includes a case-by-case review of potential academic risk for candidates and the possible corrective action that may be needed to alleviate the academic work load in the following semesters. Another contributing factor, according to Academy officials, may be that

[6]Midshipman officer command positions are those that are part of a midshipman's chain of command and include squad leader, platoon commander, and company commander. Staff positions are not directly related to the midshipman chain of command and include positions such as company honor representatives and training officer.

minorities participate heavily in varsity sports, which, because of the time demands, may preclude serving in striper positions.

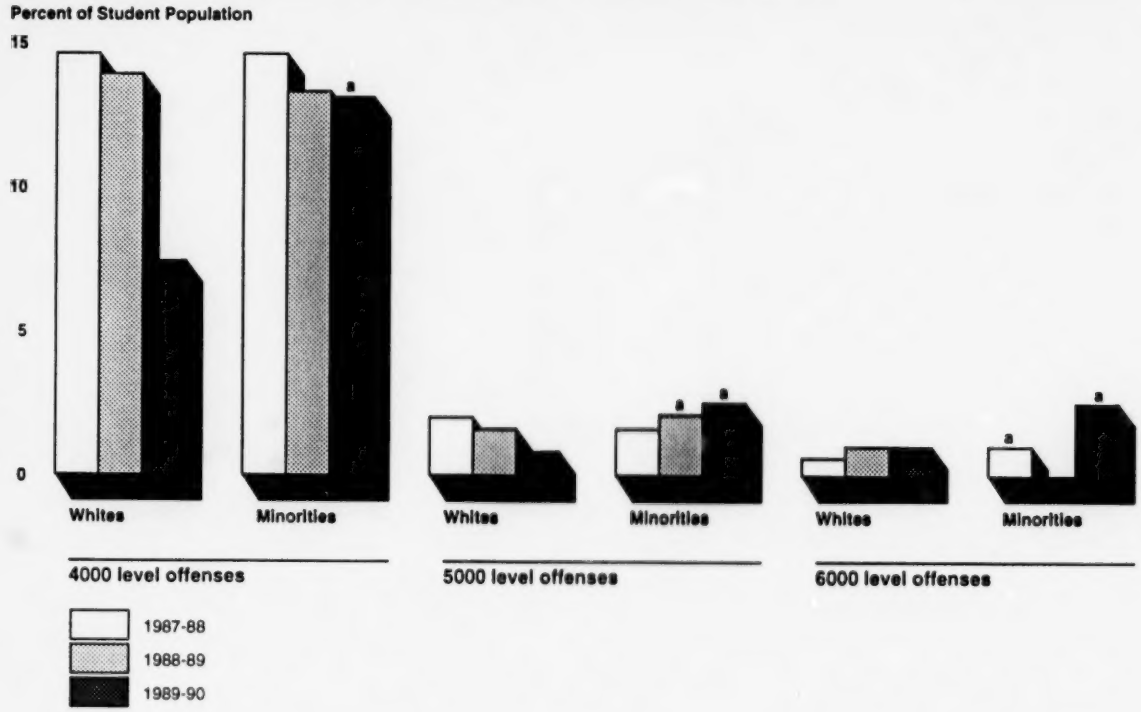
Minorities Had Higher Disciplinary, Honor Offense, and Academic Dismissal Rates

We found that minorities were convicted at higher rates than whites in both the conduct and honor systems. The racial differences were often significant. We found that over the last 4 years, the Academic Board had dismissed minorities at a slightly higher rate than whites, but the difference was not significant.

Minority Freshmen Were Convicted of Conduct Offenses at a Higher Rate Than White Freshmen

As shown in figure 3.9, in academic years 1988-90, minority freshmen generally were convicted of the three highest level conduct offenses at higher rates than white freshmen. The conduct data for sophomores, juniors, and seniors did not reveal racial disparities. The analysis involved racial comparisons for each of the three conduct levels for each of the 3 years. For example, 6 of 244 (2.5 percent) freshman minorities were convicted of the most serious level conduct offenses, compared to 10 of 1,025 (1 percent) freshman whites. The differences in the rates were significant in five of the nine comparisons. As was the case for women, the differences between the conviction rates of minorities and whites were the greatest in academic year 1989-90.

Figure 3.9: Fourth Class Midshipman Conduct Offense Conviction Rates by Race



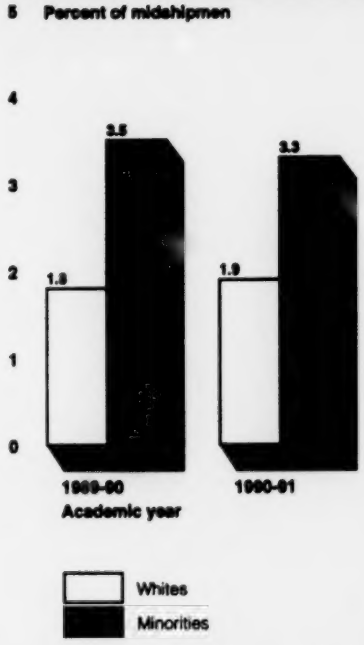
[a]Difference was significant using one or more tests.

Source: GAO analysis of Academy records.

Minorities Were Charged and Convicted of Honor Offenses at a Higher Rate Than Whites

In examining the honor cases in academic years 1990 and 1991, we found racial differences in charge, drop, and conviction rates. This analysis involved racial comparisons for each of 2 years for honor case charges, drops, and convictions. In both academic years, minorities were charged with honor offenses at a higher rate than whites, as shown in figure 3.10.

Figure 3.10: Honor Violation Charge Rates by Race

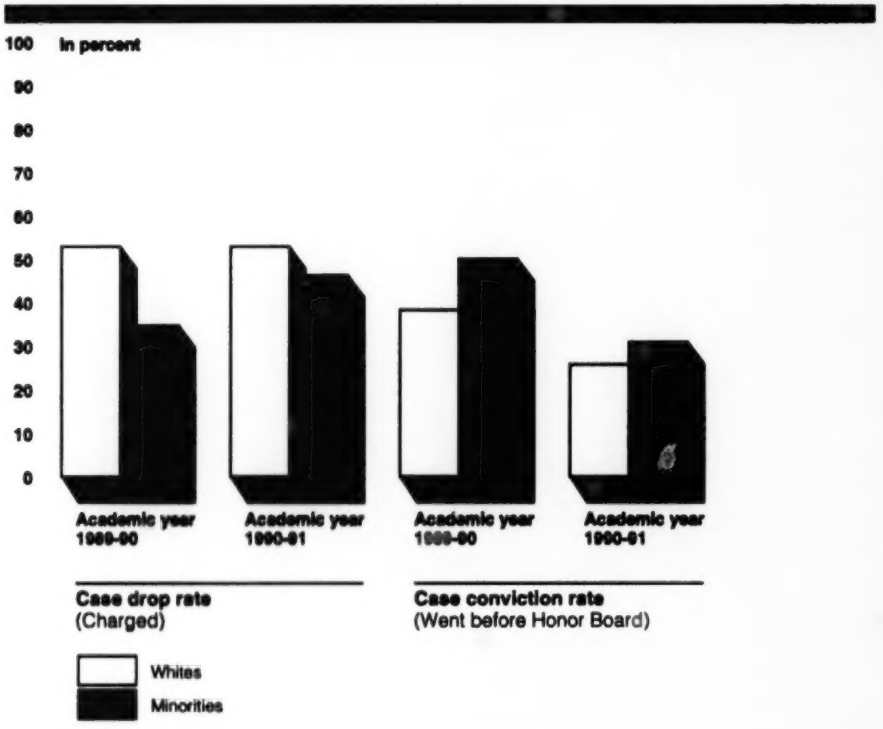


Note: Differences were significant using one or more tests for both years.

Source: GAO analysis of Academy records.

In addition, minorities charged with honor offenses had their cases dropped at a lower rate than whites. Further, minorities whose cases went to a hearing were found guilty of honor offenses at a higher rate than whites, as shown in figure 3.11. These differences were significant.

Figure 3.11: Honor Case Drop and Conviction Rates by Race



Note: Differences were significant using one or more tests for both years.

Source: GAO analysis of Academy records.

Minorities Underrepresented as Honor Representatives

Data from academic year 1991 indicated that minority participation as honor representatives was comparatively low. This analysis involved one racial comparison for each semester. As of June 30, 1991, 8 of the 79 honor positions for the class of 1991 (or 10.1 percent) were filled by minorities, although minorities made up 15.1 percent of this class. The difference between the representation rates was significant. For the class of 1992, 10 of the 79 honor positions (or 12.7 percent) were filled by minorities. The minority composition of the class of 1992 was 14.1 percent. The difference in these rates was not significant.

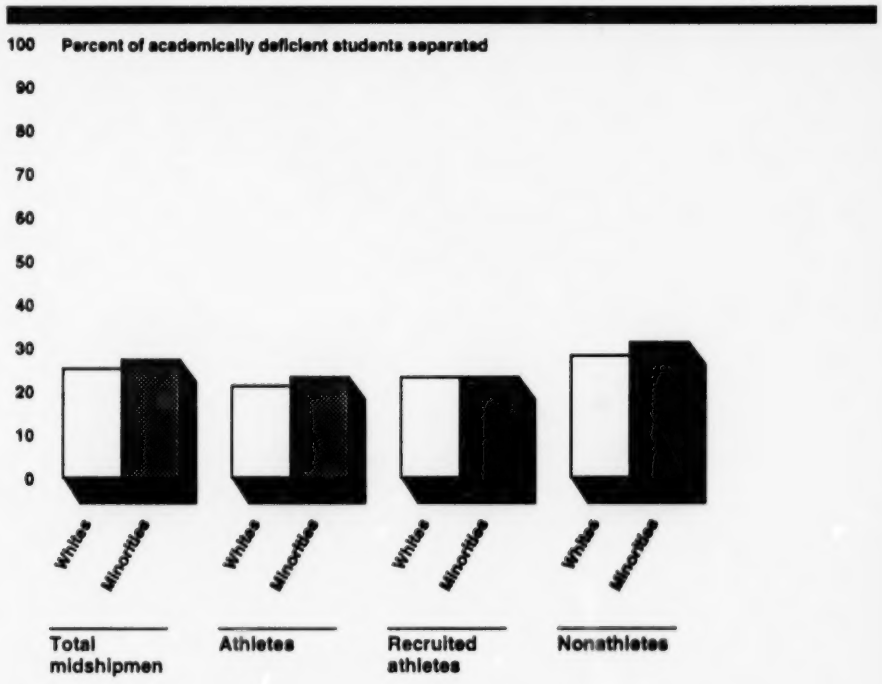
According to Academy officials, the disproportionately low minority participation can be partly attributed to the high proportion of minority varsity athletes. Academy officials stated that many minorities, because of

their heavy schedules, may not have the time to participate in another highly demanding extracurricular activity.

Minorities Separated by the Academic Board at Slightly Higher Rates Than Whites

Our review of Academic Board dismissal decisions on academic deficiency cases for academic years 1988-91 indicated racial differences to some extent. This analysis involved one racial comparison for the Academic Board decisions data set that combined the 4 academic years. In general, the Academic Board dismissed academically deficient minorities at a slightly higher rate than academically deficient whites, 27 percent compared to 25 percent (see fig. 3.12). The Academic Board separated minority athletes at a slightly higher rate than white athletes. For recruited athletes, the separation rate was the same for minorities and whites. The separation rate for minority nonathletes was somewhat higher than it was for white nonathletes. None of these differences were significant.

Figure 3.12: Academic Board Separation Rates by Race



Note: None of the differences were significant.

Source: GAO analysis of Academy records.

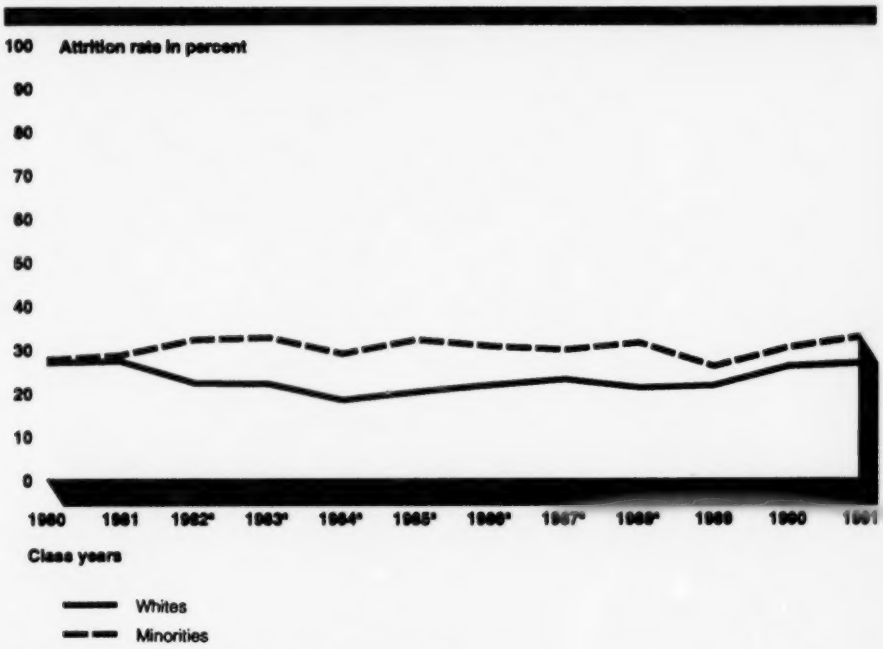
Minorities Left at Significantly Higher Rates Than Whites and Graduated Lower in Their Classes

We found that minorities have been leaving the Academy at higher rates than whites. Our review also showed that proportionally fewer minorities were graduating in the upper quarter of their classes and that proportionately fewer minorities were graduating than whites.

Attrition Rates

For the classes of 1980-91, the minority attrition rate was higher than the white attrition rate, as shown in figure 3.13. This analysis involved one comparison for each of the 12 classes. The differences between the white and minority attrition rates met the tests for significance for the classes of 1982 through 1988.

Figure 3.13: Attrition Rates by Race



[a]Difference was significant using one or more tests.

Source: GAO analysis of Academy records.

Academic Discharge Rates

Our examination of the data on reasons for attrition for the classes of 1980-94 indicated that minorities were academically discharged at a significantly higher rate than whites (43 percent compared to 22 percent). This analysis involved one racial comparison of the reasons for attrition data set that combined the classes of 1980-94.

Order of Merit Top Quartile

In reviewing the class standings for the classes of 1988-91, we found that for each of the four classes, there were proportionally fewer minorities in the upper quarter and proportionally more minorities in the lowest quarter of their classes compared to whites. This analysis involved one racial comparison for each of four classes. For example, the percentage of minorities in the lowest quartile of class standings ranged from 36 to 44, compared with 22 to 23 percent of whites. The difference in the distribution of whites and minorities in each of these classes was significant.

Academy Is Addressing Women and Minority Issues, but Further Actions Are Needed

Within the last few years, the Academy has taken a number of actions to address issues that affect women and minorities. Key among these actions were

- increasing the representation of women and minorities among the faculty and officers,
- standardizing the fourth class training for male and female students,
- assigning freshman women to all freshman platoons and companies,
- establishing an academic center for academically at-risk midshipmen, and
- initiating annual equal opportunity command assessments.

These actions primarily resulted from three Academy efforts: the July 1990 study on the assimilation of women, the August 1989 study on minority midshipmen, and the 1990 establishment of a Command Managed Equal Opportunity (CMEO) program. However, making the CMEO assessments was hampered by a lack of a localized, consolidated, and standardized computer data base.

Actions Resulting From the 1990 Study on the Assimilation of Women

The July 1990 study on the assimilation of women at the Academy concluded that women midshipmen were not as well assimilated in the brigade as women were in the fleet. The report stated that the assimilation of women in the brigade had been hampered by a persistent, vocal minority of midshipmen, officers, faculty, staff, and graduates who openly expressed the opinion that women should not be midshipmen. The report added that the negative attitude and inappropriate actions of this minority exerted such a disproportionate influence on the Academy's climate that most midshipmen readily acknowledged that women midshipmen were not accepted as equals in the brigade. The study made a number of recommendations to address these findings. As a result of the recommendations, the Academy issued a plan of action and milestones that included

- establishing a zero-tolerance policy of all forms of discrimination/nonsupport of an equal opportunity climate;
- implementing efforts to increase the female representation among faculty and brigade officers;
- assigning female freshmen to all freshman platoons/companies starting with the class of 1995 (actually begun with the class of 1994);
- coordinating the percentage of women in the class of 1995 with Navy and Marine Corps requirements;

- reinforcing the importance of providing graduates to virtually every community in the naval service;
- reviewing the procedure for disseminating information concerning the performance of all midshipmen to ensure misconceptions of preferential treatment for women or other minorities are eliminated;
- requiring that female and male freshmen be indoctrinated in an identical fashion;
- clarifying midshipmen regulations regarding sexual discrimination, including sexual harassment;
- analyzing academic performance of female midshipmen in core and majors courses; and
- reviewing the military performance system, focusing on gender inequities in the distribution of midshipmen rankings.

Many of these actions were aimed at providing more information to midshipmen regarding the role of women in the Navy and the performance of female midshipmen. For example, in terms of role models within the brigade officers, as of the fall of 1991, about 16 percent were women and 11 percent were minorities. Among the 36 company officers, 6 were women and 3 were minorities. In terms of role models within the civilian faculty, at that time, about 19 percent of authorized positions were filled by women and 6 percent by minorities. Other actions focused on reinforcing policies regarding discrimination, equal opportunity, and harassment. By taking these actions, the Academy administration emphasized its position and communicated that emphasis to all midshipmen.

Actions Resulting From the 1989 Study on Minority Midshipmen

The August 1989 study on minority midshipmen stated that the Academy would not be able to meet its commissioning goal for blacks at least through the class of 1992 because of the highly competitive recruiting climate and high academic attrition. Also, the report stated that black and Hispanic midshipmen were at a significantly greater risk of academic attrition than white midshipmen. On the basis of the recommendations contained in this study, the Academy took several actions to reduce minority academic attrition. Those actions included

- establishing a proactive 4-year academic support/intervention program for academically at-risk midshipmen;
- expanding the current academic stretchout program (an extra semester or year), placing deserving midshipmen in the program earlier in their years at the Academy than has occurred in the past;

- restricting Army-Navy week spirit activities to specific time periods so as not to adversely affect academic performance; and
- reducing the scope of the current fourth class professional book.

The primary focus of the study and its recommendations was the academic performance of minority midshipmen. An Academic Center was established in 1989 to serve midshipmen beginning with the class of 1993.

In addition to its primary focus, the study discussed some concerns for minorities pertaining to the Academy's environment. For example, the study noted that some resentment and lack of understanding existed about racial and ethnic extracurricular activities, such as the Black Studies Club. The study stated, "Most majority midshipmen feel that a homogeneous brigade excludes the need for organizations based upon racial or ethnic identity. Minorities see this as a negative perception, but a necessary price to develop self-esteem and enjoy friendships with others who share common cultural backgrounds and interests."

The study made no recommendations that addressed these findings.

Actions Resulting From the 1991 CMEO Assessment

Beginning in May 1990, the Academy established a CMEO program as part of the Navy's equal opportunity program required by all commands. The objectives of the program are to

- ensure a positive environment of equal opportunity within the brigade;
- monitor administrative practices, including, but not limited to military performance, conduct, academic performance, and physical education performance, as well as the general health of the equal opportunity climate within the brigade;
- further midshipman knowledge and understanding of the Academy's affirmative action plan; and
- indoctrinate midshipmen and reinforce midshipman knowledge of equal opportunity and the necessity for the prevention of all discrimination.

The CMEO program is comprised of a command training team and a command assessment team. The command training team is responsible for conducting the Navy's Rights and Responsibilities annual workshops that cover basic Navy equal opportunity principles, policies, and procedures. The command assessment team is responsible for conducting the annual command assessment.

According to the implementing Academy instruction, the command assessment should focus on the treatment and achievements of individuals, overall effectiveness of the brigade equal opportunity program, and follow-up actions on previously identified equal opportunity issues. The assessment is to consist of (1) a review of various types of data (conduct, military performance rankings, academic deficiencies, and physical education deficiencies); (2) individual midshipmen interviews; (3) a short survey to help determine the equal opportunity climate; and (4) a report of the accumulated data submitted to the Commandant.

To date, the Academy has conducted two command assessments. The report of the first assessment was issued in March 1991, the second assessment in March 1992. For the first assessment, the team analyzed a wide range of data, interviewed a random sample of midshipmen, and reviewed surveys and inspection reports. The 1991 assessment report presented findings of differences in performance between men and women and between whites and various minority groups, but the significance of the differences was not tested. In addition, the report contained numerous recommendations, such as to

- conduct thorough reviews of the military performance system and the physical education standards;
- brief midshipmen on athletic participation, Academic Board decisions, conduct system statistics, honor system statistics, and the striper selection process;
- continue to make extracurricular and other activities that can provide support to midshipmen available to all midshipmen;
- include contributions of women and minorities in all briefings on naval history; and
- assign more female and minority officers, especially senior officers, to the Academy.

According to the Navy instruction for implementing CMEO programs, one element of these programs is a plan of action and milestones document that is intended to implement and track the correction of existing or potential problems. Initially, Academy officials were unsure that such a document had been prepared. However, a copy of the document was recently found in Academy files. Without having such a document readily available, ensuring follow-up actions on previously identified equal opportunity issues is more difficult.

The report found the existence of midshipmen perceptions of preferential treatment received by women and minorities in areas such as admissions, physical education, and academic deficiency. According to Academy officials, in response to these perceptions, all midshipmen received training on the facts contained in the command assessment that, in many cases, did not support the perceptions. According to an Academy physical education official, the differences in the physical education testing regimen have been changed to more closely follow Navy standards. Academy officials said that the midshipmen would continue to be trained until perceptions of preferential treatment of minorities no longer exist.

The coordinator of the command assessment team submitted the 1992 report to the Commandant on March 27, 1992. Over a year has elapsed, and no document has been prepared outlining the appropriate actions to be taken in response to the report's recommendations. As of April 1993, Academy officials were in the final stages of preparing the 1993 command assessment report for submission to the Commandant.

According to the coordinator of the command assessment team, as of the week of March 29, 1993, a draft revision of the equal opportunity portion of the Academy strategic plan was sent to the Superintendent for review. This portion of the strategic plan outlined the Academy's equal opportunity program. The program consisted of two key strategies: (1) developing a professional environment that reflects mutual respect for diversity and (2) implementing a visible and effective climate that actively promotes equal opportunity and treatment for all personnel. According to the draft document, the Academy's CMEO program will become part of the equal opportunity program.

Assessments Hampered by Lack of Consolidated Data Base

Both the 1991 and 1992 command assessment reports raised concerns about the Academy's lack of a localized, consolidated, and standardized computer program for data collection. For example, the 1991 report stated that "the group responsible for data gathering spent an inordinate amount of time digging through many sources for information." The 1992 command assessment reported a similar experience:

> There is still no central repository for data at the Naval Academy. Every department derives, records, disseminates, and stores data in a different format, using incompatible computer programs so that one computer cannot communicate with another. The result is that the data required by the Command Assessment Team, being different than that

required by the Dean, the Registrar, etc., is exceedingly difficult and time consuming to generate.

We experienced many of the same difficulties in collecting Academy data to conduct our review. We began by gathering data from various Academy sources. Some data were available in the form of computer disks; other data were available only in hard copy form. Thus, to analyze the data by class, gender, race, and athlete status, we had to go through a series of steps to merge data bases.

Conclusions

Overall, the performance of women and minorities lagged behind the performance of men and whites in most of the areas we examined. Their treatment across the various Academy performance and adjudicatory systems also revealed a number of specific instances of significant disparities for women and minorities.

The Academy has taken steps aimed at ensuring the fair treatment of women and minorities. These steps appear to be positive ones and should help to address the disparities. One of the first steps in dealing with disparities is to recognize where they exist. The recent CMEO command assessments represent major steps forward in this direction.

However, in order for the CMEO and other efforts to be most effective, more needs to be done. Specifically, the command assessment teams and our own effort encountered time-consuming difficulties in collecting the needed performance indicator and adjudicatory data due to the absence of a standardized, comprehensive data base.

In addition, because the command assessment reports presented data revealing the differences in performance and adjudicatory system outcomes without applying statistical analysis, it is difficult to know which differences are significant and which are not. Without applying criteria to these differences, the Academy does not have sufficient assurance that it is focusing its attention on the ones meriting further study.

Finally, the Academy has not yet documented the actions it plans to take in response to recommendations designed to reduce gender and racial disparities.

Recommendations

As part of the Academy's efforts to ensure fair and equal treatment of all midshipmen and to improve efforts to monitor gender and racial disparities, we recommend that the Superintendent of the Academy

- develop a relational data base capability allowing routine analysis of key performance indicators for monitoring,
- establish criteria for assessing when disparities warrant more in-depth attention to identify causes to take corrective action, and
- prepare a plan of action and milestones document to track command assessment recommendations and corrective actions and assess their effectiveness.

Views of Agency Officials

We discussed a draft of this report with senior officials from the Academy and cognizant officials of the Office of the Chief of Naval Operations and DOD. They suggested a number of technical clarifications, which have been incorporated in this report, and indicated that the Academy was taking actions in line with most of our recommendations. Actions included (1) establishing an Office of Institutional Research that is tasked with achieving a consolidated data base and acting as the single source of statistical data concerning the Academy and (2) reviewing the Academy's priorities, systems, processes, and traditions as part of the Academy's Total Quality Leadership program. According to these officials, the Academy plans to include information on token status and the value of support groups in its training for faculty, staff, and midshipmen. They also told us that the Academy has been working to increase the representation of women and minorities among its faculty and staff. Pursuant to the requester's wishes, however, we did not obtain official DOD or Navy comments on the report.

Questionnaire Methodology

This appendix describes our questionnaire development process and sampling approach, the response rates, the weighting of the data, the processing of completed questionnaires, the sampling error, and other methodological issues. This report is part of a broader review of the Department of Defense service academies, which focuses on academics, military performance measurement, hazing, harassment, and the operation of academy adjudicatory systems, in addition to the treatment of women and minorities.

Questionnaire Development

Questionnaire items were developed to address the full scope of the broader review. We pretested the questionnaire with a diverse group of midshipmen who represented different classes, genders, and races. We also have the questionnaires reviewed by (1) internal Naval Academy research personnel, (2) the research staff of the Navy's study group on the treatment of women, (3) the Defense Advisory Commission on Women in the Service, and (4) our consultants familiar with the academies.

Sampling Methodology

To ensure that an adequate number of women and minorities would be included, we used a stratified random sample design allowing us to oversample those two groups. We used the last digit of the social security number to randomly select respondents from each strata.[1] We selected one final digit for all midshipmen and an additional final digit for women and minority males. Our goal was to produce a sample of about 10 percent of white males, 20 percent of females, and 20 percent of minority males.

Questionnaire Response Rates and Weighting of Data

Questionnaires were administered in November and December 1990. Respondents were assured of anonymity, and attendance was not taken at the survey administration.

Completed questionnaires were received from 527 midshipmen (a response rate of about 84 percent). Since we oversampled on the female and minority subgroups, we applied weights to the responses to allow them to represent the total Academy population. Raw weights were computed by dividing the number of subgroup responses into the subgroup population.

[1]The last four digits of social security numbers are essentially a random field based on the order in which individual social security offices process the applications they receive. Selecting one final digit could be expected to yield a sample of about 10 percent.

Sampling Error

Since we surveyed samples of midshipmen and faculty rather than the entire populations, the results were subject to some degree of uncertainty, or sampling error. Sampling errors represent the expected difference between our sample results and the results we would have obtained had we surveyed the entire population. Sampling errors are smallest when the percentage split responding to a particular question is highly skewed, such as 5 percent responding "yes" and 95 percent responding "no," and greatest when there is about a 50-50 percentage split in responses.

On the basis of the number of completed questionnaires, we estimate that our results could be generalized to the midshipman population at the 95-percent confidence level, with a maximum sampling error of plus or minus 4.1 percent.

The sampling errors for various subgroups for data cited in this report appear in table I.1. The decimal figures in the table are the sampling errors that correspond to various percentages of respondents selecting a particular response alternative. For example, if we state that 10 percent of the midshipmen responded in a given way, the table shows a sampling error of 2.7 percent corresponding to "all midshipmen" and a 10-90 percent response split. This means that we can be 95 percent confident that the percentage of midshipmen responding that way in the population would be within 10 percent, plus or minus 2.7 percent, or between 7.3 and 12.7 percent.

Table I.1: Sampling Errors for Subgroups

			Percentage split in responses									
Subgroup	**Population**	**Sample**	**05/95**	**10/90**	**15/85**	**20/80**	**25/75**	**30/70**	**35/65**	**40/60**	**45/55**	**50/50**
All midshipmen	4,391	527	2.2	2.7	3.0	3.3	3.6	3.8	3.9	4.0	4.1	4.1
Men	3,980	434	2.4	3.0	3.3	3.7	4.0	4.2	4.4	4.5	4.5	4.6
Women	411	93	5.9	6.9	7.8	8.5	8.8	8.8	9.1	9.3	9.5	9.5
Whites	3,566	336	2.8	3.6	4.1	4.2	4.6	4.8	5.0	5.1	5.2	5.2
Minorities	825	191	3.7	4.5	5.2	5.6	5.7	6.0	6.2	6.4	6.5	6.5

Analysis of Academy Data

Type and Sources of Data

The Academy has a single computer data base of student personnel and performance information (both current and historical) that is maintained in the Division of Computer Services. This data base, the Midshipman Information System, is structured into subsets designed for specific Academy users. Security of the various subsets is maintained by limiting access codes and passwords. The users themselves are responsible for updating and maintaining the data in their subsets of the data base. There is no single document that describes the data contained in this data base.

The Midshipman Information System did not contain all of the data we needed for this review. Therefore, the Academy provided us with data extracts from several internal sources that included a unique student identifier, called the "alpha number," which allowed us to construct a master file that included the indicators and the various demographic analysis variables needed.

Some indicators (such as honor case information) were not available for all classes and all years because the Academy does not maintain such data or records beyond a certain length of time. Other kinds of information (such as Academic Board cases) were not available on any machine-readable data base. Consequently, we extracted data from hard copy records such as those maintained by the Academic Board. In addition, Academy officials created some information files specifically for us (such as athlete status indicators).

The Academy was generally able to provide data covering the classes of 1988 through 1994. We restricted our analysis to the classes of 1988 through 1991, the four classes for which we had all 4 years' (fourth class through first class) worth of data. The types of data and sources we used are shown below.

The Dean of Admissions provided statistics on the numbers of applications, qualified applicants, and admissions by gender and race/ethnicity for the classes of 1988-91.

The Physical Education Department prepared a hand tally of midshipmen who were recruited athletes or varsity athletes for the classes of 1988 through 1994 and provided this information to us on computer disk, along with the athletes' alpha numbers.

The Dean of Admissions, who serves as the Academic Board Secretary, provided hard-copy notes on Academic Board decisions. These notes

contained information (such as alpha number, academic deficiency category, cumulative grade point average, semester grade point average, military performance grade, Scholastic Aptitude Test (SAT) scores, the separate/retain decisions of the Board, and some handwritten notes) on all the students appearing before the Board for academic years 1988 through 1991. We matched this data with information from a separate data base maintained by the Registrar on cases of individuals appearing before the Board.

The Division of Computer Services provided machine-readable data extracts covering all members of the classes of 1988 through 1994 from its Brigade Roster Access System. These extracts included alpha numbers, whole man multiple (entrance predictor) scores, SAT scores (math, verbal, and combined), and semester-by-semester information on military performance grades, striper rankings, company officer rankings, cumulative and semester academic grade point averages, and order of merit rankings (academic, military, and combined).

The Performance Office conducted a search of historical, hard-copy files to develop summary information for us regarding 3-striper positions from 1983-91. This information was broken out by gender and race/ethnicity.

The Ethics Officer provided information on honor representatives, broken out by gender and race/ethnicity, that he had developed through a search of hard-copy records for academic year 1991. Data on previous years were not available since the data were not maintained prior to our request.

The Division of Computer Services provided computer disks containing all 4000, 5000, and 6000 level conduct offenses charged during academic years 1988-90. The disks contained alpha numbers, offense codes, dates of offense, dates of award of punishment, and information on punishments (demerits, tours/restrictions, loss of leave, and privileges), as well as gender and race/ethnicity information.

The Division of Computer Services provided computer disks containing all honor offense cases (coded as offense code "0" in the 6000 level conduct offenses) charged during academic years 1990 and 1991. The disks contained alpha numbers, offense codes, dates of offense, dates of disposition, and information on punishments (demerits, tours/restrictions, loss of leave or privileges, and separation), as well as gender and race/ethnicity information. We independently extracted similar information from hard-copy honor files for academic years 1990 and 1991.

The Registrar provided computer disks containing separation data for the classes of 1980 through 1994. The disks contained alpha numbers, separation codes, the semesters when the midshipmen first entered the Academy and when the midshipmen were separated, gender, and race/ethnicity. The separation codes provided information on whether the separations were considered voluntary or involuntary and whether they were due to academics, conduct, honor, aptitude, physical, death, or a combination of causes. The separation codes were assigned by Academy personnel based on their assessment of the conditions surrounding each separation. In general, the codes representing the various categories of withdrawal were not considered to be highly reliable.

The Physical Education Department, at our request, compiled and provided information from hard-copy records on the racial/ethnic composition of the swimming sub-squad class during academic year 1991.

The Academy's 1991 and 1992 Command Managed Equal Opportunity reports provided the information we cite on physical education grades for academic years 1990 and 1991.

Assessment of Disparities

We used two principal types of tests to assess the significance of observed disparities. First, in all comparisons we determined whether the observed disparity could be plausibly interpreted as a chance event—that is, we tested for statistical significance. Second, in every case where the data were of the appropriate type, we used a rule of thumb test involving comparisons of the incidence of various outcomes in subgroups of the population.

In addition, we counted the number of times each subgroup was higher or lower on each measure for each period we examined. This provided an overall view of the degree of regularity in the direction of the observed differences.

Tests of Statistical Significance

We used standard statistical tests to determine whether a given observed gender or racial disparity was too large to be plausibly attributable to chance.

The data we used describe actual historical results for the classes of 1988, 1989, 1990, and 1991. In this sense the data are population data and not subject to sampling error. Our interest, however, is in the question of

whether persistent features of the situation at the Academy might produce similar results in subsequent years. For this purpose, it is appropriate to treat the classes of 1988-91 as subpopulations of a larger population of results generated by the overall situation at the Academy.[1] Statistical significance tests of observed disparities provide a screen that permits us to avoid giving too much weight to small numerical differences that might reflect chance variations in the underlying, persistent process.

Chi-Square Test

For categorical data, such as whether a midshipman was charged with an honor offense or not, we used the chi-square test to assess whether the difference between subgroup proportions was significant. We used the standard 0.05 level of significance, meaning we accepted a difference between subgroups as statistically significant if there was a 5-percent or less chance of getting a difference that large if there were no real difference between the subgroups.

T-Test

For continuous data, such as academic grade point averages, we used the t-test to assess whether the subgroup means were substantially different. We first assessed the variances of each subgroup on each measure to determine whether or not they were approximately equal. If the variances were equal, we used the pooled-variance formula for the t-test. If the variances were unequal, we used the separate-variance formula for the t-test.[2] The standard 0.05 probability of error was used as the criteria for assessing statistical significance.

The "Four-Fifths" Test

We adopted the "four-fifths" test as one measure of whether an observed difference between two groups is significant. This test is similar to the rule of thumb used by the four federal agencies responsible for equal employment opportunity enforcement (the Department of Justice, the Department of Labor, the Equal Employment Opportunity Commission, and the Office of Personnel Management) for determining whether differences between subgroups in the selection rates for hiring, promotion, or other employment decisions were significant.[3]

[1]For a discussion of applying statistical significance to population data, see R.E. Henkel, Tests of Significance(Beverly Hills, CA: Sage Publications, 1976), pp. 85-87; and M.J. Hagood, "The Notion of a Hypothetical Universe" in D.E. Morrison and R.E. Henkel (eds.) The Significance Test Controversy: A Reader (Chicago: Aldine Publishing Co., 1970).

[2]SPSS User's Guide (3rd ed.) (Chicago: SPSS, Inc., 1988).

[3]See the Uniform Guidelines on Employee Selection Procedures (29 C.F.R. section 1607). We recognize that title VII of the Civil Rights Act of 1964, which protects individuals against employment discrimination, does not apply to the uniformed members of the armed services. See Roper v. Department of the Army, 832 F2d 247 (2nd Cir. 1987).

Under this test, a selection rate for a subgroup that is less than four-fifths (or 80 percent) of the rate for the group with the highest selection rate is considered a substantially different rate. We recognize that others have applied the test only to selection rates for actions involving positive consequences. However, we judgmentally chose to apply the test to both selection and nonselection indicators (such as graduation rates).

We used a transformed version of this test to assess the incidence of decisions having negative consequences, such as disciplinary, honor offense, attrition, and academic failure rates. According to this version, an incidence rate for a negative consequence displays a significant disparity if it is more than 125 percent (five-fourths) of the rate for the comparison subgroup. In every comparison situation involving the incidence rates of outcomes in different subgroups, we used either the original test or its transformed version, as appropriate. For comparisons not involving incidence rates, such as grade averages or success predictor scores, our assessment of significance was based on statistical significance alone.

Each Kind of Test Is Problematic

Each of these two kinds of tests is relatively sensitive to differences under some circumstances, while being relatively insensitive under others. The tests that we used tend to be reactive to the number of cases. For example, when few people are subject to a particular kind of action and the resulting number of cases is therefore small, relatively large subgroup differences may not reach statistical significance. As the number of cases increases, smaller differences between subgroups become significant.

The four-fifths test, since it focuses solely on the ratio of the two rates, is unaffected by the number of cases and is therefore sensitive to differences even when the number of cases is small. However, when the number of cases is large, resulting in more stable rates, the four-fifths test may provide too much latitude before a difference would be seen as significant.

Since neither type of test is wholly satisfactory, we applied both whenever possible. If we found a difference to be significant under either type of test, we considered that difference to be significant. In general, differences that were significant according to the four-fifths test were also statistically significant. Of the 63 comparisons in which both tests were applicable, only 3 revealed statistically significant disparities that were not also significant by the four-fifths test.

Sample Conduct System Offenses by Increasing Levels of Seriousness

Conduct offense levels	Sample offenses
1000	Operating sound equipment in a manner that disturbs other midshipmen or for the benefit of midshipmen serving tours.
	Failure to have door open when room is unoccupied.
	Failure to know required fourth class knowledge.
2000	Unauthorized use of official telephone.
	Submitting a required report or document late.
	Obscene, profane, provoking, or improper language.
3000	Absent without authority, 30 minutes or less.
	Overdrawing a midshipman or civilian bank account.
	Removing articles from buildings, rooms, or containers without permission of proper authority.
4000	Absent without authority, less than 24 hours, but more than 30 minutes.
	Igniting or possessing fireworks on or in the vicinity of government property.
	Discrediting public conduct; acts done while identifiable as a member of the U.S. Navy, which tend to reflect discredit on the Brigade of Midshipmen or the Navy in the eyes of the public.
5000	Absent without authority; intentional or due to gross negligence, less than 24 hours.
	Intentional failure to properly perform a duty.
	Disrespect or insubordination to a superior or individual in position of authority (officer, midshipman, or civilian).
6000	Absent without authority, 24 hours or more.
	Sexual misconduct (including but not limited to sexual acts involving the use of force or coercion, groups, homosexuality, or service-discrediting circumstances; sexual acts by a midshipman in Bancroft Hall, academic buildings, or on the grounds of the Academy).
	Drinking, possessing, or introducing alcohol into Bancroft Hall or aboard ship.

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